

VAX/VMS Network Control Program Reference Manual

Order Number: AA-Z425C-TE

April 1986

This document lists the commands of the Network Control Program (NCP) Utility for those VAX/VMS users responsible for DECnet-VAX network management.

Revision/Update Information:

This revised document supersedes the
*VAX/VMS Network Control Program
Reference Manual Version 4.2*

Software Version:

VAX/VMS Version 4.4

**digital equipment corporation
maynard, massachusetts**

April 1986

The information in this document is subject to change without notice and should not be construed as a commitment by Digital Equipment Corporation. Digital Equipment Corporation assumes no responsibility for any errors that may appear in this document.

The software described in this document is furnished under a license and may be used or copied only in accordance with the terms of such license.

No responsibility is assumed for the use or reliability of software on equipment that is not supplied by Digital Equipment Corporation or its affiliated companies.

Copyright ©1986 by Digital Equipment Corporation

All Rights Reserved.
Printed in U.S.A.

The postpaid READER'S COMMENTS form on the last page of this document requests the user's critical evaluation to assist in preparing future documentation.

TELENET is a registered trademark of GTE Telenet Communications Corp.
PSS is a trademark of British Telecommunications plc.

The following are trademarks of Digital Equipment Corporation:

DEC	DIBOL	UNIBUS
DEC/CMS	EduSystem	VAX
DEC/MMS	IAS	VAXcluster
DECnet	MASSBUS	VMS
DECsystem-10	PDP	VT
DECSYSTEM-20	PDT	
DECUS	RSTS	
DECwriter	RSX	digital

ZK-3031

**HOW TO ORDER ADDITIONAL DOCUMENTATION
DIRECT MAIL ORDERS**

USA & PUERTO RICO*

Digital Equipment Corporation
P.O. Box CS2008
Nashua, New Hampshire
03061

CANADA

Digital Equipment
of Canada Ltd.
100 Herzberg Road
Kanata, Ontario K2K 2A6
Attn: Direct Order Desk

INTERNATIONAL

Digital Equipment Corporation
PSG Business Manager
c/o Digital's local subsidiary
or approved distributor

In Continental USA and Puerto Rico call 800-258-1710.
In New Hampshire, Alaska, and Hawaii call 603-884-6660.
In Canada call 800-267-6215.

* Any prepaid order from Puerto Rico must be placed with the local Digital subsidiary (809-754-7575).
Internal orders should be placed through the Software Distribution Center (SDC), Digital Equipment Corporation, Westminster, Massachusetts 01473.

This document was prepared using an in-house documentation production system. All page composition and make-up was performed by TeX, the typesetting system developed by Donald E. Knuth at Stanford University. TeX is a registered trademark of the American Mathematical Society.

NCP Contents

PREFACE	ix
NEW AND CHANGED FEATURES	xiii
FORMAT	NCP-1
COMMAND SUMMARY	NCP-2
DESCRIPTION	NCP-3
1 INVOKING AND EXITING THE UTILITY	NCP-3
2 COMMAND SYNTAX	NCP-4
3 ISSUING COMMANDS	NCP-4
4 COMMAND PROMPTING	NCP-5
4.1 Exiting the Prompting Sequence	NCP-5
4.2 Prompting Examples	NCP-6
5 COMPONENT NAME AND PARAMETER SYNTAX RULES	NCP-7
6 NCP HELP FACILITY	NCP-11
COMMANDS	NCP-12
CLEAR/PURGE CIRCUIT	NCP-13
CLEAR/PURGE EXECUTOR	NCP-16
CLEAR EXECUTOR NODE	NCP-20
CLEAR/PURGE LINE	NCP-21
CLEAR/PURGE LOGGING	NCP-23
CLEAR/PURGE LOGGING EVENTS	NCP-25
CLEAR/PURGE LOGGING NAME	NCP-27
CLEAR/PURGE MODULE X25-ACCESS	NCP-28
CLEAR/PURGE MODULE X25-PROTOCOL	NCP-29

NCP Contents

CLEAR/PURGE MODULE X25-SERVER/X29-SERVER	NCP-32
CLEAR/PURGE NODE	NCP-34
CLEAR/PURGE NODE CIRCUIT	NCP-37
CLEAR/PURGE OBJECT	NCP-38
CONNECT NODE	NCP-40
CONNECT VIA	NCP-41
COPY KNOWN NODES	NCP-42
DISCONNECT LINK	NCP-45
HELP	NCP-46
LOAD NODE	NCP-48
LOAD VIA	NCP-50
LOOP CIRCUIT	NCP-52
LOOP EXECUTOR	NCP-54
LOOP LINE	NCP-55
LOOP NODE	NCP-56
PURGE MODULE CONFIGURATOR	NCP-58
SET CIRCUIT ALL	NCP-59
SET/DEFINE CIRCUIT	NCP-60
SET EXECUTOR ALL	NCP-66
SET/DEFINE EXECUTOR	NCP-67
SET EXECUTOR NODE	NCP-74
SET LINE ALL	NCP-76
SET/DEFINE LINE	NCP-77
SET LOGGING ALL	NCP-83
SET/DEFINE LOGGING EVENTS	NCP-84
SET/DEFINE LOGGING STATE	NCP-86
SET/DEFINE MODULE CONFIGURATOR	NCP-88
SET/DEFINE MODULE X25-ACCESS	NCP-90
SET/DEFINE MODULE X25-PROTOCOL	NCP-92
SET/DEFINE MODULE X25-SERVER/X29-SERVER	NCP-97

SET NODE ALL	NCP-101
SET/DEFINE NODE	NCP-102
SET/DEFINE NODE CIRCUIT	NCP-107
SET OBJECT ALL	NCP-108
SET/DEFINE OBJECT	NCP-109
SHOW AREA	NCP-113
SHOW/LIST CIRCUIT	NCP-115
SHOW/LIST EXECUTOR	NCP-120
SHOW/LIST LINE	NCP-123
SHOW LINKS	NCP-126
SHOW/LIST LOGGING	NCP-128
SHOW/LIST MODULE CONFIGURATOR	NCP-131
SHOW/LIST MODULE X25-ACCESS	NCP-134
SHOW/LIST MODULE X25-PROTOCOL	NCP-135
SHOW/LIST MODULE X25-SERVER/X29-SERVER	NCP-138
SHOW/LIST NODE	NCP-140
SHOW/LIST OBJECT	NCP-145
TELL	NCP-147
TRIGGER NODE	NCP-149
TRIGGER VIA	NCP-151
ZERO CIRCUITS	NCP-152
ZERO EXECUTOR	NCP-153
ZERO LINE	NCP-154
ZERO MODULE X25-PROTOCOL	NCP-155
ZERO MODULE X25-SERVER/X29-SERVER	NCP-156
ZERO NODE	NCP-157

NCP Contents

SECTION A SUPPLEMENTAL NCP INFORMATION		NCP-159
A.1	NETWORK COUNTER SUMMARY	NCP-159
A.1.1	Circuit Counters	NCP-161
A.1.2	Line Counters	NCP-165
A.1.3	Node Counters	NCP-169
A.1.4	X.25 Protocol Module DTE Counters	NCP-171
A.1.5	X.25 Server Module Counters	NCP-172
A.2	DECNET CIRCUIT AND LINE DEVICES	NCP-173
A.3	CIRCUIT, LINE, LINK, DTE, AND SERVER MODULE STATES AND TRANSITIONS	NCP-174
A.3.1	Circuit and Line States and Transitions	NCP-174
A.3.2	Link States	NCP-177
A.3.3	DTE States and Transitions	NCP-178
A.3.4	X.25 Server Module States and Transitions	NCP-181
A.4	EVENT CLASS AND TYPE SUMMARY	NCP-181
A.4.1	Network Management Layer Events	NCP-182
A.4.2	Session Control Layer Events	NCP-184
A.4.3	End Communications Layer Events	NCP-185
A.4.4	Routing Layer Events	NCP-185
A.4.5	Data Link Layer Events	NCP-190
A.4.6	X.25 Packet Level Events	NCP-193
A.4.7	VAX/VMS System-Specific Events	NCP-194

INDEX

TABLES

NCP-1	Object Type Codes	NCP-111
NCP-2	DECnet Circuit and Line Devices	NCP-173
NCP-3	Circuit and Line States and Substates	NCP-174
NCP-4	Circuit and Line State Transitions	NCP-176
NCP-5	Link States	NCP-177

NCP-6	DTE States and Substates	NCP-178
NCP-7	DTE State Transitions	NCP-179
NCP-8	X.25 Server States	NCP-181
NCP-9	X.25 Server State Transitions	NCP-181



Preface

This reference manual presents the commands which make up the Network Control Program (NCP).

Intended Audience

The *VAX/VMS Network Control Program Reference Manual* is intended for use as a reference to the formats and syntax of the NCP commands by those already familiar with DECnet-VAX and VAX PSI concepts. System managers can use NCP to configure, control, monitor, or test DECnet-VAX and VAX PSI software running on a VAX/VMS operating system.

Structure of This Document

This document is composed of four major sections.

The Format Section is an overview of NCP and is intended as a quick reference guide. The format summary contains the DCL command that invokes NCP. The usage summary describes how to invoke and exit NCP, how to direct output, and any restrictions you should be aware of. The command summary lists all commands that can be used within NCP.

The Description Section explains how to use NCP.

The Command Section describes each NCP command. Commands appear in alphabetical order.

The Supplemental NCP Information Section contains tables and reference matter pertaining to all NCP commands.

Associated Documents

Before using the Network Control Program, you should be familiar with the DECnet-VAX concepts and NCP usage information presented in the *VAX/VMS Networking Manual*. The manual also describes the procedures needed to configure, manage, test, and monitor your network. Refer to that manual if you need more information about any NCP command listed in this reference manual.

The *DECnet-VAX Key Installation Guide* describes the procedure for installing the key for the DECnet-VAX license.

For information concerning VAX PSI, refer to the following manuals which make up the VAX PSI documentation set.

Introduction to VAX PSI

VAX PSI Installation Procedures

VAX PSI X.25 Programmer's Guide

Preface

VAX PSI X.29 Programmer's Guide

VAX PSI Management Guide

VAX PSI Packet Assembler/Disassembler (PAD) and Mail Utilities

VAX PSI Problem Solving Guide

VAX PSI Public Network Information Cards

VAX PSI Release Notes

The following functional specifications define DIGITAL Network Architecture (DNA) protocols to which all implementations of DECnet adhere:

DECnet DIGITAL Network Architecture General Description

DIGITAL Data Communications Message Protocol Functional Specification

Network Services Protocol Functional Specification

Maintenance Operation Protocol Functional Specification

Data Access Protocol Functional Specification

Routing Layer Functional Specification

DNA Session Control Functional Specification

DNA Phase IV Network Management Functional Specification

Ethernet Node Product Architecture Specification

Ethernet Data Link Functional Specification

Conventions Used in This Document

Convention	Meaning
SET EXECUTOR parameter	Example command words are shown in a command line in capital letters, and they must be entered as shown. Arguments are shown in command lines as lowercase letters. (In this case, you replace the argument shown in the command format with the precise information requested.)
{ OFF ON RESTRICTED SHUT }	Command words or arguments within braces indicate that you must choose only one of the command words or arguments. (Do not include the braces when entering the command.)
SET KNOWN LINES ALL SE KN LINE ALL	You can abbreviate any command verb to its fewest unique letters. (In this manual, however, commands, formats and examples use the complete command words.)
. . .	A vertical series of periods, or an ellipsis, means either that not all the data that the system would display in response to the particular command is shown or that not all the data a user would enter is shown.

Convention	Meaning
LOAD NODE ...	Horizontal ellipsis indicates that additional parameters, values, or information can be entered.
NCP> EXIT	Command examples show all output lines or prompting characters that the system prints or displays in black letters.
CTRL/x	This document uses red lettering to indicate all user-entered commands.
RET	The phrase CTRL/x indicates that you must press the key labeled CTRL while you simultaneously press another key, for example, CTRL/C, CTRL/Y, CTRL/O. In examples, this control key sequence is shown as ^x, for example, ^C, ^Y, ^O, because that is how the system echoes control key sequences.
[opt-arg]	A symbol with a one- to three-character abbreviation indicates that you press a key on the terminal, for example, RET .
	Square brackets indicate that the enclosed item is optional.



New and Changed Features

The following technical changes have been made to DECnet-VAX software as described in the *VAX/VMS Network Control Program Reference Manual* for VAX/VMS Version 4.4.

- The following parameters have been added to CLEAR/PURGE EXECUTOR and SET/DEFINE EXECUTOR commands:
ALIAS NODE
ALIAS INCOMING
ALIAS MAXIMUM LINKS
- The following parameters have been added to CLEAR/PURGE OBJECT and SET/DEFINE OBJECT commands:
ALIAS INCOMING
ALIAS OUTGOING
- NETWORK has been added as a parameter to the following commands:
CLEAR/PURGE CIRCUIT
CLEAR/PURGE LINE
SET/DEFINE CIRCUIT
SET/DEFINE LINE
- NETWORK/KNOWN NETWORKS has been added as a parameter to the DTE/KNOWN DTES qualifier for the following commands:
CLEAR/PURGE MODULE X25-PROTOCOL
SET/DEFINE MODULE X25-PROTOCOL
SHOW/LIST MODULE X25-PROTOCOL
- The INTERFACE parameter has been added to the following commands:
CLEAR/PURGE LINE
SET/DEFINE LINE
SET/DEFINE MODULE X25-PROTOCOL
- INTERRUPT TIMER has been added as a DTE parameter for the following commands:
CLEAR/PURGE MODULE X25-PROTOCOL
SET/DEFINE MODULE X25-PROTOCOL
- TRANSMIT PIPELINE has been added as a parameter to the following commands:
CLEAR/PURGE LINE
SET/DEFINE LINE
- ALL has been added as a parameter to the CLEAR/PURGE EXECUTOR command.
- LAPBE has been added as a value to the PROTOCOL parameter of the SET/DEFINE LINE command.

New and Changed Features

- The CLEAR/PURGE MODULE X25-PROTOCOL command now has the following parameters grouped under the DTE qualifier; previously these values were listed as separate parameters.

CALL TIMER
CLEAR TIMER
MAXIMUM CLEARS
MAXIMUM RESETS
MAXIMUM RESTARTS
RESET TIMER
RESTART TIMER

- The following parameters are now associated with the DTE qualifier of the SET/DEFINE MODULE X25-PROTOCOL command; previously these values were listed as separate parameters.

CALL TIMER
CLEAR TIMER
DEFAULT DATA
DEFAULT WINDOW
MAXIMUM CLEARS
MAXIMUM DATA
MAXIMUM RESETS
MAXIMUM RESTARTS
MAXIMUM WINDOWS
RESET TIMER
RESTART TIMER

- The following parameters have been added to the CLEAR/PURGE MODULE X25-SERVER/X29-SERVER and SET/DEFINE MODULE X25-SERVER/X29-SERVER commands:

CALLED ADDRESS
EXTENSION MASK
EXTENSION VALUE
INCOMING ADDRESS
NETWORK
RECEIVING DTE
REDIRECT REASON
SENDING ADDRESS

- The NUMBER parameter has been replaced by the SENDING ADDRESS parameter as a DESTINATION qualifier to the CLEAR/PURGE MODULE X25-SERVER/X29-SERVER and SET/DEFINE MODULE X25-SERVER /X29-SERVER commands.
- Except for control of VAX PSI software prior to Version 4.0, the following commands are no longer supported:

CLEAR/PURGE MODULE X25-TRACE
SET/DEFINE MODULE X25-TRACE
SHOW/LIST MODULE X25-TRACE

New and Changed Features

- The CLEARED option for the STATE parameter of the SET/DEFINE CIRCUIT command has been removed.
- A new table of logical link states has been added.
- New events to be logged in classes 5, 7 and 128 have been added.

The first seven tables that appeared in the *VAX/VMS Network Control Program Reference Manual*, Version 4.2, have been removed. The information that was contained in these tables appears in the tables in the *VAX/VMS Networking Manual*.



NCP

The Network Control Program (NCP) is a DECnet–VAX utility that accepts terminal commands to configure, control, monitor, and test a DECnet network.

FORMAT

RUN SYS\$SYSTEM:NCP

Command Qualifiers	Defaults
<i>None.</i>	<i>None.</i>
Command Parameters	
<i>None.</i>	

usage summary

Invoking

To invoke NCP, type RUN SYS\$SYSTEM:NCP in response to the DCL prompt. The NCP> prompt indicates that you are in the NCP utility program.

Exiting

To exit from an NCP session, type EXIT or press CTRL/Z after the NCP> prompt.

Directing Output

Output for the SHOW and LIST commands is normally displayed on the default output device, SYS\$OUTPUT. Alternatively, you may direct output to a specified file using the TO qualifier with the SHOW or LIST command.

Privileges/Restrictions

Certain privileges are required to perform most NCP commands. The only commands that can be performed without privileges are CLEAR EXECUTOR NODE, HELP, LOOP EXECUTOR, LOOP LINE, LOOP NODE, SET EXECUTOR NODE, SHOW, and TELL.

The PURGE, DEFINE, LIST and SET xxx ALL commands require the system privilege (SYSPRV) or some other way to access files with system protection, and the remaining NCP commands require the operator privilege (OPER). Note that at any time you may use access control parameters with the SET EXECUTOR NODE command to activate the network management listener (NML) to run under an account with the OPER privilege.

You must have the DETACH, CMKRLN, SYSNAM, and SYSPRV privileges to start the network when it is not currently active.

commands

Syntax

NCP> command component-name parameter [...] [qualifier] [...]

NCP Commands

CLEAR/PURGE CIRCUIT
CLEAR/PURGE EXECUTOR
CLEAR EXECUTOR NODE
CLEAR/PURGE LINE
CLEAR/PURGE LOGGING
CLEAR/PURGE LOGGING EVENTS
CLEAR/PURGE LOGGING NAME
CLEAR/PURGE MODULE X25-ACCESS
CLEAR/PURGE MODULE X25-PROTOCOL
CLEAR/PURGE MODULE X25-SERVER/X29-SERVER
CLEAR/PURGE NODE
CLEAR/PURGE NODE CIRCUIT
CLEAR/PURGE OBJECT
CONNECT NODE
CONNECT VIA
COPY KNOWN NODES
DISCONNECT LINK
HELP
LOAD NODE
LOAD VIA
LOOP CIRCUIT
LOOP EXECUTOR
LOOP LINE
LOOP NODE
PURGE MODULE CONFIGURATOR
SET CIRCUIT ALL
SET/DEFINE CIRCUIT
SET EXECUTOR ALL
SET/DEFINE EXECUTOR
SET EXECUTOR NODE
SET LINE ALL
SET/DEFINE LINE
SET LOGGING ALL
SET/DEFINE LOGGING EVENTS
SET/DEFINE LOGGING STATE
SET/DEFINE MODULE CONFIGURATOR
SET/DEFINE MODULE X25-ACCESS
SET/DEFINE MODULE X25-PROTOCOL
SET/DEFINE MODULE X25-SERVER/X29-SERVER
SET NODE ALL
SET/DEFINE NODE
SET/DEFINE NODE CIRCUIT
SET OBJECT ALL
SET/DEFINE OBJECT
SHOW AREA
SHOW/LIST CIRCUIT
SHOW/LIST EXECUTOR
SHOW/LIST LINE
SHOW LINKS
SHOW/LIST LOGGING
SHOW/LIST MODULE CONFIGURATOR
SHOW/LIST MODULE X25-ACCESS
SHOW/LIST MODULE X25-PROTOCOL

SHOW/LIST MODULE X25-SERVER/X29-SERVER
SHOW/LIST NODE
SHOW/LIST OBJECT
TELL
TRIGGER NODE
TRIGGER VIA
ZERO CIRCUITS
ZERO EXECUTOR
ZERO LINE
ZERO MODULE X25-PROTOCOL
ZERO MODULE X25-SERVER/X29-SERVER
ZERO NODE

DESCRIPTION

The Network Control Program (NCP) is the utility program system managers and operators use to configure and control DECnet-VAX networks. System managers can also use NCP to monitor network resources and test network components. The *VAX/VMS Network Control Program Reference Manual* presents the formats of the NCP commands used to perform the tasks mentioned above.

Consult the *VAX/VMS Networking Manual* for detailed descriptions explaining the usage of the NCP commands. The *VAX/VMS Networking Manual* also contains an overview of networking concepts and descriptions of the components that make up the network. Once you have read the appropriate sections of the *VAX/VMS Networking Manual* and know what NCP command (or series of commands) you need to use, refer to this manual to find the exact format of the commands.

The description of NCP covers the following topics:

- Invoking and exiting the utility
- Command syntax
- Issuing commands
- Command prompting
- Component name and parameter syntax rules
- NCP help facility

1

Invoking and Exiting the Utility

To invoke NCP, issue the DCL command

\$ RUN SYS\$SYSTEM:NCP

NCP will return the following prompt:

NCP>

Once you receive this prompt, you can issue NCP commands. To exit NCP, type EXIT or press CTRL/Z after the NCP> prompt.

Alternatively, you can execute a single NCP command by using a DCL string assignment statement. For example:

\$ NCP:==\$NCP
\$ NCP SHOW STATUS KNOWN LINES

NCP

Description

NCP will execute the SHOW KNOWN LINES command and return control to DCL.

2

Command Syntax

The command syntax has four parts: a command verb, a component name, one or more parameters, and, optionally, one or more qualifiers. An example of this syntax appears below.

Command Verb	Component	Parameter	Qualifier
SHOW	ACTIVE LINES	CHARACTERISTICS	TO file-spec
	KNOWN LINES	COUNTERS	
	LINE line-id	STATUS	
		SUMMARY	

For each command, you must supply a command verb, a component name, one or more parameters from the parameter list, and any qualifier required from the qualifier list. Unless otherwise indicated, the order in which you specify parameters makes no difference.

3

Issuing Commands

Enter NCP commands as verbs and parameters separated by spaces or tabs. To continue a long command to the next line, use the standard continuation line convention (a hyphen as the last character in the line). The NCP> prompt is not displayed on continuation lines; instead, continuation lines prompt with an underscore character. For example:

```
NCP>SET EXECUTOR -  
- ADDRESS 11 -  
- INCOMING TIMER 30 -  
- STATE ON  
NCP>
```

Use an exclamation point to designate a comment line. NCP ignores hyphens within and at the end of a comment line. However, NCP does not ignore lines beginning with an exclamation point if they follow a command line ending with a hyphen.

When entering an NCP command, you can truncate any command verb, component name, parameter name, or qualifier name to its fewest unique letters. For example, the two commands below perform the same function:

```
NCP>SET EXECUTOR ADDRESS 11 STATE ON  
NCP>SET EXE AD 11 STA ON
```

For clarity, all examples show the full command syntax.

NCP allows you to omit certain words when you enter commands. These are helping words that provide syntactic clarity. If omission of a word does not produce an ambiguous result, that word is optional. The first command below could be issued without specifying WITH, as shown in the second command. Both commands have the same meaning.

```
NCP>LOOP NODE TRNTO COUNT 100 WITH ONES  
NCP>LOOP NODE TRNTO COUNT 100 ONES
```

4**Command Prompting**

NCP prompts for selected components and parameters if they are not supplied when you issue the command. These components and parameters are those that you will use most often. Each prompt is either a list of valid choices for that position in the command string or the name of a parameter and a description of the value required.

Note: Prompting will not occur when NCP receives input from a command file. Parameter names must be supplied in command files.

Each prompt consists of two parts: the component or parameter desired, and its format. The syntax is as follows:

component (format):

The component part indicates the name of either the component or parameter. The format part indicates the range of acceptable values. The format part presents command words in uppercase, value classes in lowercase as descriptive strings, and numeric ranges as two numbers separated by a hyphen. Commas indicate alternatives that are mutually exclusive. For example:

```
(LINES, NODES):
Sink node (node-name, address):
Node address      (1.1-63.1023):
```

You should bear in mind that prompting does not guarantee that you will issue a valid command. Even if parameters are required to make the command meaningful, prompting does not demand a response when prompting for parameter values or names, as the following example indicates:

```
NCP>SET OBJECT NML      [RET]
Object number          (0-255): [RET]
File name              (filename.type): [RET]
Privileges   (List of VMS privileges): [RET]
User ID                (1-16 characters): [RET]
Password               (1-8 characters): [RET]
Account                (1-16 characters): [RET]
Proxy access INCOMING, OUTGOING, BOTH, NONE:) [RET]
%NCP-F-NOPARM, no parameters
NCP>
```

4.1**Exiting the Prompting Sequence**

You can exit a prompting sequence by entering CTRL/Z in response to the prompt. When you do so, the NCP> prompt returns, and you can then issue another NCP command. You can exit NCP directly from the prompting sequence by responding with CTRL/C or CTRL/Y, as shown in the sequence below.

```
NCP>SET      [RET]
(CIRCUIT, EXECUTOR, KNOWN, LINE,
 LOGGING, MODULE, NODE, OBJECT): LINE
Line ID                  (dev-c-u.t): DMC-1
Number of receive buffers (1-1024): [CTRL/Y]
$
```

If after responding to one or more prompts, you want to exit the prompting sequence but retain whatever information you have provided in the database, you can respond to the next prompt with _DONE, as shown below.

NCP

Description

```
NCP>DEFINE OBJECT      [RET]
Object Name          (12 characters): ALICE
Object Number         (0-255): 101
File name            (filename): ALICE.EXE
Privileges (List of VMS privileges): _DONE
%NCP-I-NMLRSP, listener response - Success
Object = ALICE
Database entry added
NCP>
```

In this example, NCP makes a new entry in the permanent database for object ALICE. Because _DONE is used in response to a prompt, NCP writes no other parameter information to the database for this object, and NCP exits the prompting sequence. Note that the NML object returns a success message whenever it modifies the permanent database successfully.

The use of _DONE may not be successful if you do not provide all necessary parameters for a given component, as shown below.

```
NCP>DEFINE OBJECT      [RET]
Object Name          (12 characters): CHUCK
Object Number         (0-255): [RET]
File name            (filename): CHUCK.EXE
Privileges (List of VMS privileges): _DONE
%NCP-I-NMLRSP, listener response - Parameter missing, number
Object = CHUCK
NCP>
```

This example is similar to the previous example except that the object number was omitted. Because each object must have a unique object number defined in the database, and because none currently exists for object CHUCK, NML failed to update the database with this information.

4.2 Prompting Examples

The following examples illustrate three types of prompting that NCP provides.

1 Prompts to supply missing component name:

```
NCP>CLEAR      [RET]
(CIRCUIT, EXECUTOR, KNOWN, LINE, LOGGING, MODULE, NODE, OBJECT):
```

No component is specified for the CLEAR command. The prompt format is a list of valid component names separated by commas. Note that the plural component name KNOWN is included in this list.

2 Prompts to supply parameter values:

```
NCP>CLEAR LINE      [RET]
LINE ID (dev-c-u):
```

NCP prompts for the line-id for this component because it is not provided with the command.

The following example shows variations of the prompting scheme for parameter values.

```
NCP>SET EXECUTOR      [RET]
Node address          (1.1-63.1023): 2.11
State                (ON, OFF, SHUT, RESTRICTED): OFF
.
.
.
Outgoing timer        (0-65535 seconds): 45
Retransmit factor     (0-65535): 10
Routing timer          (0-65535 seconds): 600
```

3 Prompts to select parameter names:

```
NCP>CLEAR LINE      [RET]  
Line ID      (dev-c-u.t): DMC-1  
All line parameters (Y,N):
```

NCP prompts for the selected parameter names whose values are to be removed from the database. In this case, no parameter name was given; consequently, NCP asks if all values should be removed. The Y parameter indicates that all values should be removed. Using N or RETURN causes NCP to provide a different response.

```
NCP> CLEAR NODE BOSTON      [RET]  
All node parameters (Y,N): [RET]  
Host node      (Y,N): Y
```

```
.  
Service password      (Y,N): Y  
Tertiary loader      (Y,N): N
```

Because RETURN is the response to the first prompt above, NCP prompts for all of the parameter names.

5

Component Name and Parameter Syntax Rules

When you issue NCP commands, many component names, parameters, and qualifiers require you to supply additional information. For the most part, their syntax follows a standard set of rules. Exceptions to these rules are documented in the description of the component, parameter, or qualifier to which they apply.

For the list below, all numeric values are in decimal and have a range of 0 to 65,535 unless otherwise specified. The syntax of the various component-name, parameter, and qualifier values is summarized below.

account

A string of up to 39 alphanumeric and hyphen characters. VAX/VMS systems do not currently use this string for access control.

area-number

A decimal value in the range 1 to 63 to be specified in the beginning of the node-spec and separated from the node number by a period. If you do not specify an area number, the area number of the executor is used. The default area number for the executor is 1.

NCP

Description

circuit-id	A string of characters whose exact syntax is that for a DECnet or X.25 circuit identification. DDCMP circuit identification takes one of the following formats: <code>dev-c</code> <code>dev-c-u</code> <code>dev-c.t</code> <code>dev-c-u.t</code>																		
dev	A device name. See Table NCP-2 for a complete list of possible circuit devices and descriptions.																		
c	A decimal number (0 or a positive integer) designating the device's hardware controller.																		
u	A decimal unit or circuit number (0 or a positive integer) included only if there is more than one unit associated with the controller.																		
t	A decimal number (0 or a positive integer) that identifies a tributary on a multipoint circuit. This is a logical tributary number, not to be confused with the tributary address that is used to poll the tributary.																		
count	For Ethernet circuits, circuit-id is a string in the form UNA-c, where UNA indicates the DEUNA circuit device.																		
cpu-type	For X.25 circuits provided by VAX PSI, circuit-id is a string of up to 16 characters beginning with "X25-." A decimal numeric value.																		
dest-name	A string of characters consisting of one of the following: <code>DECSYSTEM1020</code> <code>PDP11</code> <code>PDP8</code> <code>VAX</code>																		
device-type	An identification string consisting of 1 to 16 alphanumeric characters. A string of characters consisting of one of the following: <table><tr><td>CI</td><td>DMF</td><td>KMV</td></tr><tr><td>DP</td><td>DMP</td><td>KMX</td></tr><tr><td>DQ</td><td>DMV</td><td>KMY</td></tr><tr><td>DU</td><td>DPV</td><td>PCL</td></tr><tr><td>DV</td><td>DUP</td><td>QNA</td></tr><tr><td>DMC</td><td>DUV</td><td>UNA</td></tr></table>	CI	DMF	KMV	DP	DMP	KMX	DQ	DMV	KMY	DU	DPV	PCL	DV	DUP	QNA	DMC	DUV	UNA
CI	DMF	KMV																	
DP	DMP	KMX																	
DQ	DMV	KMY																	
DU	DPV	PCL																	
DV	DUP	QNA																	
DMC	DUV	UNA																	
dte-address	A string of up to 15 decimal digits. See the <i>VAX PSI Public Network Information Cards</i> for the exact format of this parameter on your network.																		

E-address

A string of 12 hexadecimal digits, represented by 6 bytes separated by hyphens (for example, AA-00-04-00-AB-04). The string indicates an Ethernet address. The bytes are ordered from left to right as transmitted and received on the Ethernet.

event-list

A list of event types for a given class in the format class.type. When specifying an event list, you may specify only one class; however, you can specify a range of types by using commas and hyphens, for example, 4.3-5,7-10. You can use the asterisk wildcard character in an event list, but only to replace an event type. The following table provides examples of these formats.

Event List	Meaning
4.4	Identifies event class 4, type 4
4.5-7	Identifies event class 4, types 5 through 7
4.5,7-9,11	Identifies event class 4, types 5, 7 through 9, and 11. Note that types must be specified in ascending order.
4.*	Identifies all event types for class 4 events.

file-spec

A VAX/VMS file specification string in the following general format:

`node-id::device:[directory]filename.type.version`

Logical names are permitted. For a file in your current directory, you need specify only a filename of up to 39 alphanumeric characters, optionally followed by a period and a file type of up to 39 alphanumeric characters.

Refer to the *VAX/VMS DCL Concepts Manual* for the format of a VAX/VMS file specification, and the *Guide to VAX/VMS File Applications* for more information on specifying files.

hex-password

A string of up to 8 hexadecimal digits.

hex-value

A string of up to 32 hexadecimal digits.

id-string

A string of up to 32 characters. If the string includes spaces or tabs, enclose it within quotation marks.

NCP

Description

line-id	A string of characters whose exact syntax is that for a DECnet or X.25 line identification. For VAX/VMS, line-id takes one of the following formats: dev-c dev-c-u dev Is a device name. See Table NCP-2 for a complete list and description of DECnet line devices. c Is a decimal number (0 or a positive integer) designating the device's hardware controller. u Is a decimal unit or line number (0 or a positive integer) included if the device is a multiple unit line controller.
	For all non-multiplexed lines, the unit number is optional and, if specified, is always zero (0).
milliseconds	A decimal numeric value.
network-name	For X.25 circuits, specifies a 1- to 16-character alphanumeric identifier that indicates the network to be used.
node-address	A numeric value in the range of 1.1 to 63.1023, composed of an area number to the left of the period followed by a node number to the right of the period. (The node number indicates the address of the node within the specified area.) If the area number is not supplied, the area number of the executor node is used. The default area number for the executor is 1.
node-id	Either a node-name or a node-address.
node-name	A string of up to six alphanumeric characters containing at least one alphabetic character.
node-spec	A node-id followed by optional access control information as specified for VAX/VMS in the form: node-id"user password account"
node-type	A string of characters consisting of one of the following: Routing III Nonrouting III Routing IV Nonrouting IV Area
number	A decimal numeric value.
object-name	A string of up to 12 printable characters.
password	A string of up to 39 printable characters.
privilege-list	A list of VAX/VMS privilege names delimited by space characters.
seconds	A decimal numeric value.

sink-name	A string of alphanumeric characters. The logging console name is a string in the form TTcnn: (if a terminal) or a file-spec if it is a file that receives events in the console format. The logging file name is a file-spec. The logging monitor name is a 1- to 9-character name. If the string includes spaces or tabs, enclose it in quotation marks.
software-id	A string of up to 16 characters.
software-type	A string of characters consisting of one of the following: SECONDARY LOADER TERTIARY LOADER SYSTEM
tributary-address	A numeric value in the range of 0 to 255.
user-id	A string of up to 39 alphanumeric and hyphen characters.

Quotation mark delimiters are valid for the node-spec format described above. In addition, use quotation marks as delimiters when providing receive and transmit passwords for the SET NODE and DEFINE NODE commands. For example:

NCP>SET NODE TRANSMIT PASSWORD "HI VAX"

Also, use quotation marks to delimit the software identification string specified for the IDENTIFICATION parameter of the SET EXECUTOR command. For example:

NCP>SET EXECUTOR IDENTIFICATION "VMS HOST SYSTEM"

6

NCP HELP Facility

NCP provides an extensive HELP facility that contains information about each NCP command and its parameters and qualifiers, including general examples of its use. The information in the HELP file is tree structured, which makes it easy to retrieve information quickly and efficiently. The HELP command description in this chapter provides examples to illustrate the use of the HELP command for a typical terminal session.

Use the HELP command to display information at various levels of detail. For example, each HELP display includes a list of command words under an "Additional Information Available" section. These command words serve as topics for the next level of information accessible by the HELP command. In the general format of the HELP command shown below, the topic is a command word from the list:

NCP>HELP [topic...]

You can abbreviate command words when you issue the command. Once you enter a particular level of detail, that level becomes the current level for accessing information. Through the use of the prompts *Topic?* and *Subtopic?* you can return to a higher or lower level of information, respectively. The highest level of information is the general description of the HELP facility.

NCP

Commands

COMMANDS

The following section presents the NCP commands in alphabetical order. You can abbreviate any command verb, component name, parameter, or qualifier as long as the abbreviation is not ambiguous. Certain words provide syntactic clarity but are optional. If omission of a word in an NCP command line produces an unambiguous result, that word is optional.

For convenience, commands that have the same components and parameters, yet different command verbs—depending upon whether they access the volatile or the permanent database—are listed together. Examples of commands listed together are CLEAR and PURGE, SET and DEFINE, and SHOW and LIST, where CLEAR, SET, and SHOW verbs apply to the volatile database and PURGE, DEFINE, and LIST verbs apply to the permanent database. When two commands are grouped together, components and parameters are described for the command that accesses the volatile database. Normally, the actions described for the volatile database also apply to the permanent database. However, if certain commands apply only to a particular database or if a different action is required for the volatile and permanent database, these exceptions are specifically noted under the command.

In general, the NCP commands and parameters are common to most network configurations. Exceptions to this general rule are noted under the command or parameter to which they apply. For example, if a parameter is restricted in use to a certain context (for example, to VAX PSI operations only), this restriction is noted under the parameter.

Note: Although NCP may accept a particular command syntax, this is no guarantee that NML on DECnet-VAX or some other DECnet implementation will support the function.

For a complete description of the network components specified in NCP commands, see the *VAX/VMS Networking Manual*. This manual also explains how to use the NCP commands to manage the DECnet network.

The Supplemental NCP Information Section, which follows the Command Section, contains tables and descriptive information to supplement the individual command summaries. This information includes

- A network counter summary
- A table of DECnet circuit and line devices
- Tables of circuit, line, link, DTE, and server module states and substates
- A summary of DECnet event classes and types

CLEAR/PURGE CIRCUIT

The CLEAR CIRCUIT command resets circuit parameters in the volatile database to the default value (if any), or removes them from the volatile database on the local node or DTE. The PURGE CIRCUIT command always removes circuit parameters from the permanent database on the local node or DTE.

FORMAT

CLEAR *circuit-component parameter [...]*
PURGE *circuit-component parameter [...]*

circuit components

KNOWN CIRCUITS

Resets to the default value (if any) or removes from the volatile database the parameters for all known circuits.

CIRCUIT *circuit-id*

Resets to the default value (if any) or removes from the volatile database the parameters for a specific circuit. Circuit-id specifies the name of the circuit you want to clear.

command parameters

ACTIVE BASE

Applies only to DDCMP CONTROL circuits. Resets to its default value the ACTIVE BASE value in the volatile database.

ACTIVE INCREMENT

Applies only to DDCMP CONTROL circuits. Resets to its default value the ACTIVE INCREMENT value in the volatile database.

ALL

Removes from the volatile database the specified circuit or all known circuits. The circuit must be in the OFF state before you specify this parameter.

BABBLE TIMER

Applies only to DDCMP CONTROL circuits. Resets to its default value the BABBLE TIMER value in the volatile database.

COUNTER TIMER

Cancels the logging timer. This cancellation prevents any further circuit counter logging for the indicated circuit or circuits.

DEAD THRESHOLD

Applies only to DDCMP CONTROL circuits. Resets to its default value the DEAD THRESHOLD count in the volatile database.

DYING BASE

Applies only to DDCMP CONTROL circuits. Resets to its default value the DYING BASE value in the volatile database.

NCP

CLEAR/PURGE CIRCUIT

DYING INCREMENT

Applies only to DDCMP CONTROL circuits. Resets to its default value the DYING INCREMENT value in the volatile database.

DYING THRESHOLD

Applies only to DDCMP CONTROL circuits. Resets to its default value the DYING THRESHOLD count in the volatile database.

INACTIVE BASE

Applies only to DDCMP CONTROL circuits. Resets to its default value the INACTIVE BASE value in the volatile database.

INACTIVE INCREMENT

Applies only to DDCMP CONTROL circuits. Resets to its default value the INACTIVE INCREMENT value in the volatile database.

INACTIVE THRESHOLD

Applies only to DDCMP CONTROL circuits. Resets to its default value the INACTIVE THRESHOLD value in the volatile database.

MAXIMUM BUFFERS

Applies only to DDCMP CONTROL circuits. Resets to its default value the MAXIMUM BUFFERS value in the volatile database.

MAXIMUM RECALLS

Applies only to X.25 DLM circuits. Resets to its default value the limit on the number of call retries.

MAXIMUM ROUTERS

Applies only to Ethernet circuits. Resets to its default value the MAXIMUM ROUTER value in the volatile database.

MAXIMUM TRANSMITS

Applies only to DDCMP CONTROL circuits. Resets to its default value the MAXIMUM TRANSMIT count in the volatile database.

NETWORK

Applies only to purging X.25 PVCs and X.25 DLM circuits. Removes the circuit's network parameters from the permanent database.

RECALL TIMER

Applies only to X.25 DLM circuits. Resets to its default value the RECALL TIMER value in the volatile database.

ROUTER PRIORITY

Applies only to Ethernet circuits. Resets to its default value the priority assigned to the router in the volatile database.

TRANSMIT TIMER

Applies only to DDCMP CONTROL circuits. Resets to its default value the TRANSMIT TIMER value in the volatile database.

EXAMPLES

1 NCP>CLEAR CIRCUIT DMC-0 ALL

This command removes all parameter entries for circuit DMC-0 in the volatile database. As a result, the circuit no longer exists for the local DECnet software.

2 NCP>CLEAR CIRCUIT DMP-0.4 COUNTER TIMER

This command removes the COUNTER TIMER parameter for circuit DMP-0.4 from the volatile database.

3 NCP>PURGE CIRCUIT X25-ANDIES ALL

This command removes all parameter entries in the permanent database for the X.25 permanent virtual circuit (PVC) called X25-ANDIES.

CLEAR/PURGE EXECUTOR

The CLEAR EXECUTOR command resets to the default value (if any) or removes selected local node parameters from the volatile database on the local node. The PURGE EXECUTOR command removes selected local node parameters from the permanent database on the local node.

You cannot clear the BUFFER SIZE or STATE parameters from the volatile database.

FORMAT

CLEAR EXECUTOR *parameter [...]*
PURGE EXECUTOR *parameter [...]*

command parameters

ALIAS INCOMING

Removes from the volatile database the ALIAS INCOMING parameter for the local node.

ALIAS MAXIMUM LINKS

Resets to its default value the ALIAS MAXIMUM LINKS value for the local node in the volatile database.

ALIAS NODE

Removes from the volatile database the alias node identifier for the local node.

ALL

Removes from the permanent database all executor parameters.

AREA MAXIMUM COST

Resets to its default value the AREA MAXIMUM COST value for the local node in the volatile database.

AREA MAXIMUM HOPS

Resets to its default value the AREA MAXIMUM HOPS value for the local node in the volatile database.

BROADCAST ROUTING TIMER

Resets to its default value the BROADCAST ROUTING TIMER value in the volatile database.

BUFFER SIZE

Removes from the permanent database the BUFFER SIZE value.

COUNTER TIMER

Removes from the volatile database the logging timer to prevent any further circuit counter logging for the local node.

DEFAULT PROXY

Resets to its default value the DEFAULT PROXY value for the local node in the volatile database.

DELAY FACTOR

Resets to its default value the DELAY FACTOR value for the local node in the volatile database.

DELAY WEIGHT

Resets to its default value the DELAY WEIGHT value for the local node in the volatile database.

IDENTIFICATION

Removes from the volatile database the identification string for the local node.

INACTIVITY TIMER

Resets to its default value the INACTIVITY TIMER value for the local node in the volatile database.

INCOMING TIMER

Resets to its default value the INCOMING TIMER value for the local node in the volatile database.

MAXIMUM ADDRESS

Resets to its default value the MAXIMUM ADDRESS value for the local node in the volatile database.

MAXIMUM AREA

Resets to its default value the MAXIMUM AREA value for the local node in the volatile database.

MAXIMUM BROADCAST NONROUTERS

Resets to its default value the MAXIMUM BROADCAST NONROUTERS value in the volatile database.

MAXIMUM BROADCAST ROUTERS

Resets to its default value the MAXIMUM BROADCAST ROUTERS value in the volatile database.

MAXIMUM BUFFERS

Resets to its default value the MAXIMUM BUFFERS value for the local node in the volatile database.

MAXIMUM CIRCUITS

Resets to its default value the MAXIMUM CIRCUITS value for the local node in the volatile database.

MAXIMUM COST

Resets to its default value the MAXIMUM COST value for the local node in the volatile database.

MAXIMUM HOPS

Resets to its default value the MAXIMUM HOPS value for the local node in the volatile database.

MAXIMUM LINKS

Resets to its default value the MAXIMUM LINKS value for the local node in the volatile database.

MAXIMUM VISITS

Resets to its default value the MAXIMUM VISITS value for the local node in the volatile database.

NONPRIVILEGED item

Removes from the volatile database the specified nonprivileged access control information. Specify any or all of the following items for removal:

ACCOUNT
PASSWORD
USER

OUTGOING TIMER

Resets to its default value the OUTGOING TIMER value for the local node in the volatile database.

PRIVILEGED item

Removes from the volatile database the specified privileged access control information. Specify any or all of the following items for removal:

ACCOUNT
PASSWORD
USER

RETRANSMIT FACTOR

Resets to its default value the RETRANSMIT FACTOR value for the local node in the volatile database.

ROUTING TIMER

Resets to its default value the ROUTING TIMER value for the local node in the volatile database.

SEGMENT BUFFER SIZE

Resets to its default value the SEGMENT BUFFER SIZE value in the volatile database.

STATE

Removes from the permanent database the local node's state.

SUBADDRESSES

Removes from the volatile database the value of the range of local DTE subaddresses.

TYPE

Resets to its default value the type of the local node in the volatile database.

EXAMPLES

- 1 NCP>PURGE EXECUTOR IDENTIFICATION INCOMING TIMER**

This command removes the local node's identification string and incoming timer value from the permanent database.

- 2 NCP>PURGE EXECUTOR COUNTER TIMER**

This command removes the local node counter timer value from the permanent database.

- 3 NCP>CLEAR EXECUTOR AREA MAXIMUM COST**

This command resets to its default value the AREA MAXIMUM COST parameter in the volatile database for the local node whose type is AREA. AREA MAXIMUM COST is the total cost allowed from the local node to any other level 2 router.

NCP

CLEAR EXECUTOR NODE

CLEAR EXECUTOR NODE

The CLEAR EXECUTOR NODE command clears the default executor designation for all NCP commands. The executor of commands becomes the local node. The TELL prefix cannot be used with this command.

After you issue the CLEAR EXECUTOR NODE command, NML, linked with NCP on the local node, will perform all NML operations. NML uses the privileges of your current process instead of the default nonprivileged or privileged accounts.

FORMAT

CLEAR EXECUTOR NODE

command parameters

None.

EXAMPLE

NCP>SET EXECUTOR NODE TRNTO"GRAY MARY"

.

NCP>CLEAR EXECUTOR NODE

The first command sets the executor node to node TRNTO. The second command clears the default executor node designation specified previously by the SET EXECUTOR NODE command.

CLEAR/PURGE LINE

The CLEAR LINE command resets to the default value (if any) or removes line parameters from the volatile database on the local node or DTE. For an X.25 line, the default value depends on the NETWORK parameter. The PURGE LINE command always removes line parameters from the permanent database on the local node or DTE.

FORMAT

CLEAR *line-component parameter [...]*
PURGE *line-component parameter [...]*

line components**KNOWN LINES**

Resets to the default value (if any) or removes the parameters for all known lines from the volatile database.

LINE *line-id*

Identifies the specific line whose parameters are to be reset to their default values (if any) or removed from the volatile database.

**command
parameters****ALL**

Removes the specified line or all known lines from the volatile database. The line must be in the OFF state before you specify this parameter.

COUNTER TIMER

Resets the logging timer to zero. This prevents any further line counter logging for the indicated line(s).

DEAD TIMER

Applies only to DDCMP lines. Resets to its default value the DEAD TIMER parameter in the volatile database.

DELAY TIMER

Applies only to DDCMP lines. Removes from the volatile database the DELAY TIMER parameter.

HANGUP

Applies only to asynchronous DDCMP lines. Removes from the volatile database the HANGUP parameter.

INTERFACE

Applies only to X.25 lines. Resets the INTERFACE parameter to the default value of DTE.

LINE SPEED

Applies only to asynchronous DDCMP lines. Removes from the volatile database the LINE SPEED parameter.

NCP

CLEAR/PURGE LINE

MAXIMUM RETRANSMITS

Applies only to X.25 lines. Resets the maximum number of retransmissions of a frame to the default value for the specified line or all known lines in the volatile database.

NETWORK

Applies only to X.25 lines. Removes the NETWORK parameter from the permanent database.

SCHEDULING TIMER

Applies only to DDCMP lines. Resets to its default value the SCHEDULING TIMER parameter in the volatile database.

STREAM TIMER

Applies only to DDCMP lines. Resets to its default value the STREAM TIMER parameter in the volatile database.

SWITCH

Applies only to asynchronous DDCMP lines. Removes from the volatile database the SWITCH parameter.

TRANSMIT PIPELINE

Applies only to DMR11 lines. Removes from the volatile database the TRANSMIT PIPELINE parameter.

EXAMPLES

1 NCP>**CLEAR LINE DMC-0 ALL**

This command removes line DMC-0 from the volatile database.

2 NCP>**CLEAR LINE DUP-0 ALL**

This command removes the line called DUP-0 from the volatile database.

3 NCP>**CLEAR KNOWN LINES MAXIMUM RETRANSMITS**

This command resets the maximum number of retransmissions of a frame for all known lines in the volatile database. The parameter is reset to its default value.

CLEAR/PURGE LOGGING

The CLEAR LOGGING command removes logging parameters from the volatile database on the local node or DTE. The PURGE LOGGING command removes logging parameters from the permanent database on the local node or DTE.

FORMAT

CLEAR *logging-component parameter*
PURGE *logging-component parameter*

logging components

KNOWN LOGGING

Removes from the volatile database the parameters for all known logging.

LOGGING CONSOLE

Removes from the volatile database all parameters for logging to the console.

LOGGING FILE

Removes from the volatile database all parameters for logging to a file.

LOGGING MONITOR

Removes from the volatile database all parameters for logging to a monitor.

command parameters

ALL

Removes all parameters from the volatile database. The component will no longer be recognized by the network.

CIRCUIT *circuit-id*

Removes from the volatile database all logging parameters for the specified circuit.

LINE *line-id*

Removes from the volatile database all logging parameters for the specified line.

MODULE *name*

Removes from the volatile database all logging parameters for the specified module. Note that the word MODULE is optional. Module names include

X25-PROTOCOL
X25-SERVER
X29-SERVER
X25-ACCESS

NODE *node-id*

Removes from the volatile database all logging parameters for the specified node.

NCP

CLEAR/PURGE LOGGING

EXAMPLE

NCP>CLEAR LOGGING CONSOLE ALL

This command clears logging to the logging console. This component is no longer recognized by the network.

CLEAR/PURGE LOGGING EVENTS

The CLEAR LOGGING EVENT command removes source-related logging parameters from the volatile database on the local node or DTE. The PURGE LOGGING EVENTS command removes source-related logging parameters from the permanent database on the local node or DTE.

FORMAT

CLEAR *logging-component parameter [...]*
PURGE *logging-component parameter [...]*

logging components

KNOWN LOGGING

Removes from the volatile database the parameters for all known logging.

LOGGING CONSOLE

Removes from the volatile database the parameters for logging to the console.

LOGGING FILE

Removes from the volatile database the parameters for logging to a file.

LOGGING MONITOR

Removes from the volatile database the parameters for logging to a monitor program.

command parameters

EVENTS event-list

KNOWN EVENTS

Removes from the volatile database an event class and type or all event classes and types. You can associate any of the source parameters below with the EVENTS parameter specified.

CIRCUIT circuit-id

Identifies the circuit to which the events apply.
Events will not be logged for this circuit.

LINE line-id

Identifies the line to which the events apply. Events will not be logged for this source.

MODULE name

Identifies the module to which the events apply.
Events will not be logged for this source. Module names include

X25-PROTOCOL
X25-SERVER
X29-SERVER
X25-ACCESS

Note that the word MODULE is optional.

NCP

CLEAR/PURGE LOGGING EVENTS

NODE node-id	Identifies the node to which the events apply. Events will not be logged for this source.
SINK	Identifies the node where the event logger runs to log the events. There are two possibilities: NODE node-id Identifies the node at which events are being logged EXECUTOR Identifies the local node
	Only events being logged to this node are removed from the volatile database. If this parameter is omitted, the local node is assumed to be the sink node affected.

EXAMPLES

1 NCP>**CLEAR LOGGING FILE EVENTS 2.***

This command clears logging to the logging file for all class 2 events.

2 NCP>**CLEAR LOGGING CONSOLE KNOWN EVENTS LINE DMC-1**

This command clears logging to the console for all known events currently being logged for line DMC-1.

CLEAR/PURGE LOGGING NAME

The CLEAR LOGGING NAME command removes the name of the logging sink from the volatile database on the local node or DTE. The PURGE LOGGING NAME command removes the name of the logging sink from the permanent database on the local node or DTE.

You must issue a SET LOGGING *component* STATE OFF command before attempting to use the CLEAR command.

FORMAT

CLEAR *logging-component NAME*
PURGE *logging-component NAME*

logging components

KNOWN LOGGING

Indicates that the name of the logging sink for all known logging is to be removed from the volatile database.

LOGGING CONSOLE

Indicates that the name of the logging console is to be removed from the volatile database.

LOGGING FILE

Indicates that the name of the logging file is to be removed from the volatile database.

LOGGING MONITOR

Indicates that the name of the logging monitor is to be removed from the volatile database.

EXAMPLE

NCP>**CLEAR LOGGING CONSOLE NAME**

This command clears the name of the logging console from the volatile database.

NCP

CLEAR/PURGE MODULE X25-ACCESS

CLEAR/PURGE MODULE X25-ACCESS

Use the CLEAR MODULE X25-ACCESS command to remove from the volatile database network names and parameters used by the host node to access a specified X.25 network or networks through a multihost connector node. Use the PURGE MODULE X25-ACCESS command to remove these same network names and parameters from the permanent database. Note that the word MODULE is optional.

FORMAT

CLEAR MODULE X25-ACCESS	<i>qualifier</i> <i>parameter [...]</i>
PURGE MODULE X25-ACCESS	<i>qualifier</i> <i>parameter [...]</i>

qualifiers

KNOWN NETWORKS **NETWORK** *network-name*

The name of a specific network or all of the network names to be removed from the volatile database. After you specify the NETWORK qualifier, you should follow it with one or more of these parameters:

ALL	Removes all X25-ACCESS module parameters from the volatile database.
ACCOUNT	Removes user account access control information from the volatile database.
PASSWORD	Removes the password access control information from the volatile database.
USER	Removes the user identification from the access control information in the volatile database.

EXAMPLES

1 NCP>CLEAR MODULE X25-ACCESS NETWORK TELENET1 ALL

This command removes the network TELENET1 from the volatile database in the local node. The local node will no longer be able to connect to X.25 network TELENET1 through the multihost connector node.

2 NCP>CLEAR MODULE X25-ACCESS NETWORK TELENET1 PASSWORD

This command removes the password access control information for the network TELENET1 from the volatile database in the local node.

CLEAR/PURGE MODULE X25-PROTOCOL

Use the CLEAR MODULE X25-PROTOCOL command to remove the protocol module component from the volatile database or to reset individual parameters. (Parameters are reset to their default values; the network values are specified by the PROFILE parameter of the SET MODULE X25-PROTOCOL command.) Use the PURGE MODULE X25-PROTOCOL command to remove the parameters of the protocol module component from the permanent database. Note that the word MODULE is optional.

Use separate CLEAR or PURGE MODULE X25-PROTOCOL commands to clear or purge the network, the DTE, or the group.

You may not be able to change the values of some of the network parameters (see the *VAX PSI Public Network Information Cards*.)

FORMAT

CLEAR MODULE X25-PROTOCOL [qualifier]
parameter [...]

PURGE MODULE X25-PROTOCOL [qualifier]
parameter [...]

qualifiers

DTE dte-address
KNOWN DTES

Removes parameters for the specified DTE or all known DTEs in the volatile database. If you specify the DTE qualifier, you must associate with it either of the following parameters:

NETWORK network-name

Selects the DTE(s) specified on a particular network. With the PURGE command the network part of the qualifier can be omitted if there is only one network defined.

KNOWN NETWORKS

Selects the DTE(s) on all known networks.

Additionally, you must follow the DTE qualifier with one or more of the following parameters:

ALL

Removes the specified DTE or all known DTEs from the volatile database.

CALL TIMER

If used with the CLEAR command, resets to its default value the call timer in the volatile database; if used with the PURGE command, removes the parameter from the permanent database.

CLEAR TIMER

If used with the CLEAR command, resets to its default value the clear timer in the volatile database; if used with the PURGE command, removes the parameter from the permanent database.

NCP

CLEAR/PURGE MODULE X25-PROTOCOL

COUNTER TIMER	Removes the counter timer for the specified DTE or all known DTEs from the volatile database. (Used only with the CLEAR MODULE X25-PROTOCOL command.)
INTERRUPT TIMER	If used with the CLEAR command, resets the interrupt timer to its default value in the volatile database. If used with the PURGE command, removes the parameter from the permanent database.
MAXIMUM CLEARS	If used with the CLEAR command, resets to the default value in the volatile database the maximum number of attempts to clear a circuit; if used with the PURGE command, removes the parameter from the permanent database.
MAXIMUM RESETS	If used with the CLEAR command, resets to the default value in the volatile database the maximum number of attempts to reset a circuit; if used with the PURGE command, removes the parameter from the permanent database.
MAXIMUM RESTARTS	If used with the CLEAR command, resets to the default value in the volatile database the maximum number of attempts to restart a virtual circuit; if used with the PURGE command, removes the parameter from the permanent database.
RESET TIMER	If used with the CLEAR command, resets to its default value in the volatile database the reset timer; if used with the PURGE command, removes the parameter from the permanent database.
RESTART TIMER	If used with the CLEAR command, resets to its default value in the volatile database the restart timer; if used with the PURGE command, removes the parameter from the permanent database.

GROUP group-name ***KNOWN GROUPS***

Removes parameters for the specified closed user group (CUG) or bilateral closed user group (BCUG), or all known groups, in the database. If you specify a group-qualifier, you must follow it with this parameter:

ALL Removes all parameters for the specified group or all known groups.

NETWORK network-name ***KNOWN NETWORKS***

Removes all DTEs, groups and parameters for the specified network or all known networks in the volatile database. The parameter ALL is mandatory.

ALL Removes all parameters for the network or networks.

EXAMPLES

1 NCP>**CLEAR MODULE X25-PROTOCOL GROUP ESECUG ALL**

This command removes the closed user group ESECUG from the volatile database.

NCP

CLEAR/PURGE MODULE X25-PROTOCOL

2 NCP>PURGE MODULE X25-PROTOCOL GROUP ESECUG ALL

This command removes the parameters of the closed user group ESECUG from the permanent database. As a result, the group will no longer exist for VAX PSI when the system is rebooted.

3 NCP>CLEAR MODULE X25-PROTOCOL DTE 123789456 NETWORK PSS1 ALL

This command removes the specified DTE belonging to the network PSS1 from the volatile database.

4 NCP>PURGE MODULE X25-PROTOCOL DTE 123789456 KNOWN NETWORKS ALL

This command removes all parameter entries for the DTE, for all networks in which the DTE exists, from the permanent database. As a result, the DTE will no longer exist for VAX PSI when the system is rebooted.

5 NCP>CLEAR MODULE X25-PROTOCOL ALL

This command removes all network, DTE, group, and X25-PROTOCOL module parameters from the volatile database.

6 NCP>CLEAR MODULE X25-PROTOCOL NETWORK PSS1 ALL

This command removes all DTEs and groups on network PSS1 and then removes the network name itself.

**7 NCP>CLEAR MODULE X25-PROTOCOL KNOWN DTES -
- KNOWN NETWORKS COUNTER TIMER**

This command removes the COUNTER TIMER parameter for all DTEs on all networks from the volatile database.

NCP

CLEAR/PURGE MODULE X25-SERVER /X29-SERVER

CLEAR/PURGE MODULE X25-SERVER /X29-SERVER

Use the CLEAR MODULE X25-SERVER or CLEAR MODULE X29-SERVER command to reset or remove the X.25 or X.29 call handler from the volatile database or to remove individual parameters. Use the PURGE MODULE X25-SERVER or PURGE MODULE X29-SERVER command to remove the parameters of the X.25 or X.29 call handler from the permanent database. Note that the word MODULE is optional.

FORMAT	CLEAR MODULE X25-SERVER [qualifier] parameter [...]
	CLEAR MODULE X29-SERVER [qualifier] parameter [...]
	PURGE MODULE X25-SERVER [qualifier] parameter [...]
	PURGE MODULE X29-SERVER [qualifier] parameter [...]

qualifiers***DESTINATION dest-name***
KNOWN DESTINATIONS

Identifies the destination or all known destinations whose parameters are to be reset or removed from the database. If you specify a destination qualifier, you must follow it with one or more of the following parameters:

ACCOUNT	Removes from the volatile database the account for the specified destination or all known destinations.
ALL	Removes from the volatile database all parameters for the specified destination or all known destinations.
CALL MASK	Removes from the volatile database the call mask for the specified destination or all known destinations.
CALL VALUE	Removes from the volatile database the call value for the specified destination or all known destinations.
CALLED ADDRESS	Removes from the volatile database the called DTE address for the specified destination or all known destinations.
EXTENSION MASK	Removes from the volatile database the extension mask for the specified destination or all known destinations.
EXTENSION VALUE	Removes from the volatile database the extension value for the specified destination or all known destinations.
GROUP	Removes from the volatile database the group name for the specified destination or all known destinations.

CLEAR/PURGE MODULE X25-SERVER /X29-SERVER

INCOMING ADDRESS	Removes from the volatile database the incoming address for the specified destination or all known destinations.
NETWORK	Removes from the volatile database the network name for the specified destination or all known destinations.
PASSWORD	Removes from the volatile database the password for the specified destination or all known destinations.
PRIORITY	Resets to the lowest value the priority for the specified destination or all known destinations.
RECEIVING DTE	Removes from the volatile database the receiving DTE address for the specified destination or all known destinations.
REDIRECT REASON	Removes from the volatile database the redirect reason code for the specified destination or all known destinations.
SENDING ADDRESS	Removes from the volatile database the sending DTE address for the specified destination or all known destinations.
SUBADDRESSES	Removes from the volatile database the subaddress range for the specified destination or all known destinations.
USER	Removes from the volatile database the user identification for the specified destination or all known destinations.

command parameter**COUNTER TIMER**

Resets the module counter timer to 0. This is the only parameter that does not require that a destination qualifier be specified.

EXAMPLES

1 NCP>CLEAR MODULE X25-SERVER KNOWN DESTINATIONS ALL

This command removes all X.25 destinations from the volatile database.

2 NCP>PURGE MODULE X25-SERVER KNOWN DESTINATIONS ALL

This command removes all parameters for all X.25 destinations from the permanent database.

CLEAR/PURGE NODE

The CLEAR NODE command removes node parameters from the volatile database on the local node. The PURGE NODE command removes node parameters from the permanent database on the local node.

To remove a loop node name from the database, use the CLEAR /PURGE NODE node-id command and specify either the ALL parameter (with the loop node name or address as the node-id), or the CIRCUIT parameter.

FORMAT

CLEAR *node-component parameter [...]*
PURGE *node-component parameter [...]*

node components

KNOWN NODES

Removes from the volatile database the specified parameters for all known nodes.

NODE *node-id*

Identifies the node (local or remote) whose parameters are to be removed from the volatile database.

command parameters

ALL

Removes from the volatile database all parameters for the specified node or all known nodes. The component is no longer recognized by the network. The PURGE KNOWN NODES ALL command will purge both the executor and remote node databases.

CIRCUIT *circuit-id*

Removes from the volatile database the circuit name parameter for this node.

COUNTER TIMER

Removes from the volatile database the COUNTER TIMER value.

CPU

Removes from the volatile database the node's CPU identification.

DIAGNOSTIC FILE

Removes from the volatile database the identification of the downline loading diagnostics file.

DUMP ADDRESS

Removes from the volatile database the upline dump address of the adjacent node.

DUMP COUNT

Removes from the volatile database the upline dump count.

DUMP FILE

Removes from the volatile database the upline dump file identification.

HARDWARE ADDRESS

Removes from the volatile database the hardware Ethernet address.

HOST

Removes from the volatile database the identification of the host node.

INBOUND

Applies only to nodes connected by DDCMP point-to-point circuits. Removes from the volatile database the INBOUND parameter.

LOAD FILE

Removes from the volatile database the identification of the downline loading file.

NAME

Removes from the volatile database the node name parameter for the node address.

NONPRIVILEGED item

Removes from the volatile database the specified nonprivileged access control information. Specify any or all of the following items for removal:

ACCOUNT
PASSWORD
USER

PRIVILEGED item

Removes from the volatile database the specified privileged access control information. Specify any or all of the following items for removal:

ACCOUNT
PASSWORD
USER

RECEIVE PASSWORD

Removes from the volatile database the receive password expected from the remote node during a Routing initialization sequence.

SECONDARY LOADER

Removes from the volatile database the identification of the secondary downline loading file.

SERVICE CIRCUIT

Removes from the volatile database the circuit parameter associated with the node for downline loading purposes.

NCP

CLEAR/PURGE NODE

SERVICE DEVICE

Removes from the volatile database the service device type.

SERVICE NODE VERSION

Removes from the volatile database the DECnet-VAX software version number of the node to be loaded downline.

SERVICE PASSWORD

Removes from the volatile database the password parameter required to trigger the bootstrap mechanism of the node to be loaded downline.

SOFTWARE IDENTIFICATION

Removes from the volatile database the identification of the software.

SOFTWARE TYPE

Removes from the volatile database the initial load software program type.

TERTIARY LOADER

Removes from the volatile database the identification of the tertiary downline loading file.

TRANSMIT PASSWORD

Removes from the volatile database the transmit password sent to the remote node during a Routing initialization sequence.

EXAMPLES

1 NCP>CLEAR NODE TRNTO ALL

This command removes all parameter entries for node TRNTO in the volatile database. As a result, the node no longer exists for local DECnet-VAX software.

2 NCP>CLEAR NODE 14 NAME

.

NCP>SET NODE 15 NAME DENVER

The first command disassociates the name DENVER from node 14. The second command associates the same name with node 15.

3 NCP>CLEAR NODE 5.14 NAME

.

NCP>SET NODE 5.15 NAME DENVER

The first command disassociates the name DENVER from node 5.14. The second command associates the same name with node 5.15. Use this example in place of the previous example when the network is divided into multiple areas.

4 NCP>CLEAR NODE BOSTON RECEIVE PASSWORD

This command removes the receive password from the record for the local node in the volatile database.

CLEAR/PURGE NODE CIRCUIT

The CLEAR NODE CIRCUIT command removes a loop node from the volatile database on the executor node. The PURGE NODE CIRCUIT command removes a loop node from the permanent database on the executor node.

FORMAT

CLEAR *node-component CIRCUIT*
PURGE *node-component CIRCUIT*

**node
components**

KNOWN NODES

Indicates that all loop nodes are to be removed from the volatile database.

NODE *node-name*

Identifies the loop node to be removed from the volatile database.

EXAMPLE

```
NCP>SET NODE TESTER CIRCUIT DMC-0  
.  
.  
NCP>CLEAR NODE TESTER CIRCUIT
```

The first command sets a loop node for circuit DMC-0. The second command removes the loop node from the volatile database.

CLEAR/PURGE OBJECT

The CLEAR OBJECT command removes from the volatile database object parameters on the local node. The PURGE OBJECT command removes from the permanent database object parameters on the local node.

FORMAT

CLEAR *object-component parameter [...]*
PURGE *object-component parameter [...]*

**object
components****KNOWN OBJECTS**

Indicates that parameters for all known objects are to be removed from the volatile database.

OBJECT *object-name*

Identifies the object whose parameters are to be removed from the volatile database.

**command
parameters****ACCOUNT**

Removes from the volatile database the account access control information.

ALIAS INCOMING

Removes from the volatile database the ALIAS INCOMING parameter for the specified object or all known objects. Does not apply to VAX PSI.

ALIAS OUTGOING

Removes from the volatile database the ALIAS OUTGOING parameter for the specified object or all known objects. Does not apply to VAX PSI.

ALL

Removes from the volatile database all parameters for the specified object or all known objects. The component is no longer recognized by the network.

FILE

Removes from the volatile database the name of the object's startup command file.

PASSWORD

Removes from the volatile database the password access control information.

PRIVILEGES

Removes from the volatile database the privileges required to access the object. Does not apply to VAX PSI.

PROXY

Removes from the volatile database the proxy access information for the object. Does not apply to VAX PSI.

USER

Removes from the volatile database the user access control information.

EXAMPLE

NCP>**CLEAR OBJECT DTR ALL**

This command removes all parameter entries for the DTR object in the volatile database. As a result, the object no longer exists for the local DECnet-VAX software.

CONNECT NODE

The CONNECT NODE command sets up a logical connection between the host node and the console interface on a specified target node. Both the host node and the target node must be on the same Ethernet circuit.

To define default information for the target node in the volatile database, use the NCP command SET NODE to specify the SERVICE CIRCUIT, SERVICE PASSWORD, and HARDWARE ADDRESS parameters for the target node. Once set, you can override these default parameters for the target node by specifying new parameters in the CONNECT command.

FORMAT

CONNECT *node-component [parameter] [...]*

**node
component*****NODE* *node-id***

Identifies the node name or address of the target node to be connected to the local node.

**command
parameters*****PHYSICAL ADDRESS* *E-address***

Specifies the Ethernet physical address of the target node. The value is the Ethernet address that the target node has set for itself or, if the target node has not set an Ethernet address, the HARDWARE ADDRESS parameter associated with the target node in the executor node's volatile database.

SERVICE CIRCUIT* *circuit-id

Specifies the circuit to be used to create the logical link between the host node and the target node. This circuit must be an Ethernet circuit.

SERVICE PASSWORD* *hex-password

Identifies the password required to create the logical link between the host node and the target node. The password is a hexadecimal number in the range 0 to FFFFFFFFFFFFFF.

EXAMPLE

```
NCP>CONNECT NODE RTRDEV SERVICE PASSWORD FEFEEFEFEFEFEFE -  
- SERVICE CIRCUIT UNA-0 PHYSICAL ADDRESS AA-00-04-00-38-00
```

This command connects the host node to the console interface on the target node RTRDEV specifying the service password FEFEEFEFEFEFEFE, the service circuit UNA-0, and the Ethernet physical address AA-00-04-00-38-00.

CONNECT VIA

The CONNECT VIA command sets up a logical connection between the host node and the console interface on a target node using the specified circuit. Use the CONNECT VIA command instead of the CONNECT NODE command if the DECnet node address of the target node is not known. Both the host node and the target node must be on the same Ethernet circuit.

FORMAT

command parameters

CONNECT VIA *circuit-id parameter [...]*

PHYSICAL ADDRESS E-address

This parameter is required. Specifies the Ethernet physical address of the target node. The value is the Ethernet address that the target node has set for itself.

SERVICE PASSWORD hex-password

Identifies the password required to create the logical link between the host node and the target node. The password is a hexadecimal number in the range 0 to FFFFFFFFFFFFFF.

EXAMPLE

NCP>CONNECT VIA UNA-0 PHYSICAL ADDRESS AA-00-04-00-38-00

This command connects the host node to the console interface on the target node by specifying the circuit over which the connection is to be made and the Ethernet physical address of the target node.

COPY KNOWN NODES

The COPY KNOWN NODES command updates the node database on the local node. You can copy the volatile or permanent node database from a remote node to either or both the volatile and permanent node databases on the local node. You also have the option of clearing or purging the node database on the local node before the copy operation is begun.

Only the node name and node address are copied. A node entry will not be copied into the node database if it would result in the association of two names with one address or two addresses with one name.

FORMAT

COPY *node-component parameter [qualifier] [...]*

node component

KNOWN NODES

Indicates that names and addresses of all known nodes stored in the database of the specified remote node are to be copied.

command parameter

FROM *node-id*

Specifies the remote node from which node database information is to be copied. The remote node can be any node in the network to which you have access. The word FROM is optional.

qualifiers

USING option

Specifies the node database on the remote node from which the information is to be copied. The two possible options are

VOLATILE Indicates that the volatile database on the remote node is to be copied.

PERMANENT Indicates that the permanent database on the remote node is to be copied.

The default is VOLATILE.

TO option

Specifies the node database on the local node to which the information is to be copied. The three possible options are

VOLATILE Indicates that the information is to be copied to the volatile database on the local node.

PERMANENT Indicates that the information is to be copied to the permanent database on the local node.

BOTH Indicates that the information is to be copied to both the volatile and permanent databases on the local node.

The default is VOLATILE.

WITH option

Clears or purges the node database on the local node before the copy operation is performed. Retains the executor node characteristics and the name and address of the remote node from which the node information is to be copied. The node database to be cleared or purged is the local database to which the information will be copied. The two options are listed below (note that you can actually specify either CLEAR or PURGE for either database or both databases).

CLEAR Clears the volatile node database at the local node.

PURGE Purges the permanent node database at the local node.

If the WITH qualifier is not specified, the node entries copied are added to the existing node database(s).

EXAMPLES

1 NCP>LIST KNOWN NODES
Known Node Permanent Summary as of 22-JAN-1986 13:50:20
Executor node = 2.20 (Robin)
Remote node = 2.21 (Thrush)
Remote node = 2.22 (Lark)

NCP>TELL LARK LIST KNOWN NODES
Known Node Permanent Summary as of 22-JAN-1986 13:53:27
Executor node = 2.22 (Lark)
Remote node = 2.20 (Robin)
Remote node = 2.23 (Dove)

NCP>COPY KNOWN NODES FROM LARK USING PERMANENT -
- TO PERMANENT WITH PURGE
%NCP-I-NMLRSP,listener response - Success
Remote node = 2.21 (Thrush)
%NCP-I-RECDELET, Database entry deleted
%NCP-I-NMLRSP,listener response - Success
Remote node = 2.22 (Lark)
%NCP-I-RECDELET, Database entry deleted
%NCP-I-NMLRSP,listener response - Success
Executor node = 2.20 (Robin)
%NCP-I-RECDELET, Database entry deleted

NCP>LIST KNOWN NODES
Known Node Permanent Summary as of 22-JAN-1986 14:01:05
Executor node = 2.20 (Robin)
Remote node = 2.22 (Lark)
Remote node = 2.23 (Dove)

This copy command copies the node information from the permanent node database on node LARK into the permanent node database on the local node (ROBIN). The node database is purged before the copy operation is begun.

NCP

COPY KNOWN NODES

```
2 NCP>SHOW KNOWN NODES
Known Node Volatile Summary as of 22-JAN-1986 13:50:20
Executor node = 2.20 (Robin)
Remote node = 2.21 (Thrush)
Remote node = 2.22 (Lark)

NCP>TELL LARK SHOW KNOWN NODES
Known Node Volatile Summary as of 22-JAN-1986 13:53:27
Executor node = 2.22 (Lark)
Remote node = 2.20 (Robin)
Remote node = 2.23 (Dove)

NCP>COPY KNOWN NODES FROM LARK
NCP>SHOW KNOWN NODES
Known Node Volatile Summary as of 22-JAN-1986 14:01:05
Executor node = 2.20 (Robin)
Remote node = 2.21 (Thrush)
Remote node = 2.22 (Lark)
Remote node = 2.23 (Dove)
```

This copy command copies the node information from the volatile node database on node LARK into the volatile node database on the local node (ROBIN). In this example, the volatile node database on the local node is not cleared before the copy operation is begun.

DISCONNECT LINK

The DISCONNECT LINK command disconnects logical links active on the local node.

FORMAT

DISCONNECT *link-component [qualifier]*

link components

KNOWN LINKS

Indicates that all links are to be disconnected.

LINK number

Identifies the particular logical link to be disconnected. Use a number in the range of 1 to 65,535.

qualifier

WITH NODE node-id

Identifies the node with which all logical links are to be disconnected. The node-id is either a node name or a node address. You can use this command verb with only the KNOWN LINKS argument.

EXAMPLES

1 NCP>SHOW KNOWN LINKS

Known Link Volatile Summary as of 15-FEB-1986 15:53:42

Link	Node	PID	Process	Remote link	Remote user
4104	11.9 (DALLAS)	20600090	GRAY	3116	MAIL
8229	3.5 (TRNTO)	2060014C	DAVIS	7217	NML
3126	2.17 (NYC)	2060023D	REMACP	5175	THOMPSON_1

NCP>DISCONNECT KNOWN LINKS WITH NODE DALLAS

This command disconnects all known links to remote node DALLAS. Use the SHOW LINKS command to identify the link address.

2 NCP>SET EXECUTOR NODE DENVER

.

NCP>DISCONNECT KNOWN LINKS
NCP>CLEAR EXECUTOR NODE

The first command sets the executor node to DENVER. Subsequently, the DISCONNECT KNOWN LINKS command is issued, disconnecting the link to NML on DENVER. As a result, you must either issue the SET EXECUTOR NODE command again, or you must issue the CLEAR EXECUTOR NODE command to reestablish communication with the local node's NML.

HELP

Use the HELP command to obtain general information about NCP commands and parameters. See Section 6 for more information about the NCP Help Facility.

FORMAT

HELP [topic...]

command parameter

topic

Is a command word listed in the HELP display under Information Available. You may specify up to eight topics separated by spaces or tabs.

EXAMPLES

1 NCP>**HELP**

Information available:

```
CLEAR Commands CONNECT DEFINE DISCONNECT EVENTS EXIT
HELP LIST LOAD LOOP PARAMETERS Prompting PURGE
SET SHOW TELL TRIGGER ZERO
```

Topic?

This command displays all command verbs for which further information exists.

2 NCP>**HELP CLEAR CIRCUIT**

```
CLEAR
CIRCUIT
```

The CLEAR CIRCUIT command resets circuit parameters in the volatile database to the default value (if any), or removes them from the volatile database on the local node or DTE. The PURGE CIRCUIT command always removes circuit parameters from the permanent database on the local node or DTE.

```
CLEAR KNOWN CIRCUITS      (parameters...)
      CIRCUIT circuit-id
```

Additional information available:

KNOWN CIRCUITS	CIRCUIT circuit-id	ACTIVE BASE	ACTIVE INCREMENT
ALL	BABBLE TIMER	COUNTER TIMER	DEAD THRESHOLD
DYING BASE	DYING INCREMENT	DYING THRESHOLD	INACTIVE BASE
INACTIVE INCREMENT	INACTIVE THRESHOLD	MAXIMUM BUFFERS	MAXIMUM RECALLS
MAXIMUM ROUTERS	MAXIMUM TRANSMITS	NETWORK	RECALL TIMER
ROUTER PRIORITY	TRANSMIT TIMER	Examples	

This command provides a description of the NCP command CLEAR CIRCUIT and displays command words for which further information exists.

3 NCP>HELP SHOW

SHOW

Use the SHOW command to display information from the volatile database on the executor node. Use the LIST command to display information from the permanent database on the executor node.

Additional information available:

CHARACTERISTICS COUNTERS EVENTS STATUS SUMMARY
TO file-spec AREA CIRCUIT EXECUTOR LINE LINKS LOGGING
MODULE NODE OBJECT

This command provides a description of the NCP command SHOW and displays command words for which further information exists.

NCP

LOAD NODE

LOAD NODE

The LOAD NODE command loads software downline to a target node. This command loads the software using either the identified circuit (if specified) or the circuit obtained from the volatile database. Any parameter left unspecified in the command defaults to whatever entry is specified in the volatile database on the executor node.

FORMAT

LOAD *node-component parameter [...]*

node component

NODE *node-id*

Identifies the node name or address of the target node to be loaded downline.

command parameters

ADDRESS *node-address*

Identifies the address that the target node is to use (when it comes up).

CPU *cpu-type*

Identifies the node's CPU type. There are four possibilities:

DECSYSTEM1020
PDP11
PDP8
VAX

FROM *file-spec*

Identifies the file specification of the load file containing the system software to be loaded downline.

HOST *node-id*

Identifies the default host that the target node is to use (when it comes up).

NAME *node-name*

Identifies the name that the target node is to use (when it comes up).

PHYSICAL ADDRESS *E-address*

Applies only to nodes on Ethernet circuits. Specifies the Ethernet address that the target node to be loaded downline currently uses to identify itself. The value is the Ethernet address that the target node has set for itself or, if the target node has not set an Ethernet address, the HARDWARE ADDRESS parameter if associated with the target node in the executor node's volatile database.

SECONDARY LOADER *file-spec*

Identifies the file specification of a secondary load file containing the software to be loaded downline.

SERVICE DEVICE *device-type*

Identifies the target node's line controller for the service line over which the operation is to take place. The possibilities are listed below.

DA	DL	DLV	DMC	DMF
DMP	DMR	DMV	DP	DPV
DQ	DTE	DU	DUP	DV
DZ	KDP	KDZ	KL	PCL
QNA	UNA			

Only the synchronous port on the DMF device may be used.

SERVICE PASSWORD *hex-password*

Identifies the password required to trigger the bootstrap mechanism on the target node. The password is a hexadecimal number. For DDCMP circuits, it is in the range 0 to FFFFFFFF; for Ethernet circuits, it is in the range 0 to FFFFFFFFFFFFFF.

SOFTWARE IDENTIFICATION *software-id*

Is the ID of the software to be loaded downline.

SOFTWARE TYPE *software-type*

Identifies the particular file type to be loaded first. There are three possibilities:

SECONDARY LOADER
TERTIARY LOADER
SYSTEM

TERTIARY LOADER *file-spec*

Identifies the file specification of a tertiary load file containing the software to be loaded downline.

VIA *circuit-id*

Identifies a circuit over which the loading sequence is to take place.

EXAMPLES

1 NCP>LOAD NODE NYC HOST BOSTON VIA DMC-2

This command initiates a downline load operation for node NYC over circuit DMC-2. When loaded, node NYC will have node BOSTON as the default host specification.

2 NCP>LOAD NODE BANGOR

This command initiates a downline load operation for node BANGOR. Any required default information is retrieved from the volatile database on the executor node.

3 NCP>LOAD NODE SWIFT PHYSICAL ADDRESS AA-00-04-00-07-04

This command initiates a downline load operation for node SWIFT on an Ethernet circuit. The executor node will use the Ethernet physical address specified in the command to address node SWIFT.

LOAD VIA

The LOAD VIA command downline loads software to a target node using the specified circuit. The target node identification is obtained from the volatile database on the executor node. If the target node is on an Ethernet circuit, the PHYSICAL ADDRESS parameter must be specified in this command.

FORMAT	LOAD VIA <i>circuit-id parameter [...]</i>
command parameters	ADDRESS node-address Identifies the address that the target node is to use (when it comes up).
	CPU cpu-type Identifies the node's CPU type. There are four possibilities: DECSYSTEM1020 PDP11 PDP8 VAX
	FROM file-spec Identifies the file specification of the load file containing the system software to be loaded downline.
	HOST node-id Identifies the default host that the target node is to use (when it comes up).
	NAME node-name Identifies the name that the target node is to use (when it comes up).
	PHYSICAL ADDRESS E-address Applies only to nodes on Ethernet circuits. Specifies the Ethernet address that the target node to be loaded downline currently uses to identify itself. The value is the Ethernet address that the target node has set for itself or, if the target node has not set an Ethernet address, the HARDWARE ADDRESS parameter if associated with the target node in the executor node's volatile database.
	SECONDARY LOADER file-spec Identifies the file specification of a secondary load file containing the software to be loaded downline.
	SERVICE DEVICE device-type Identifies the target node's line controller for the service line over which the operation is to take place. The possibilities are

DA	DL	DLV	DMC	DMF
DMP	DMR	DMV	DP	DPV
DQ	DTE	DU	DUP	DV
DZ	KDP	KDZ	KL	PCL
QNA	UNA			

Only the synchronous port on the DMF device may be used.

SERVICE PASSWORD hex-password

Identifies the password required to trigger the bootstrap mechanism on the target node. The password is a hexadecimal number. For DDCMP circuits, it is in the range 0 to FFFFFFFF; for Ethernet circuits, it is in the range 0 to FFFFFFFFFFFFFF.

SOFTWARE IDENTIFICATION software-id

Is the ID of the software to be loaded downline.

SOFTWARE TYPE software-type

Identifies the particular file type to be loaded first. There are three possibilities:

SECONDARY LOADER
TERTIARY LOADER
SYSTEM

TERTIARY LOADER file-spec

Identifies the file specification of a tertiary load file containing the software to be loaded downline.

EXAMPLES

1 NCP>LOAD VIA DMP-0.4

This command initiates a downline load operation over circuit DMP-0.4. Any required default information is retrieved from the volatile database on the executor node. NCP scans the node database until it finds a node whose service circuit matches the load circuit.

2 NCP>LOAD VIA DMC-0 SOFTWARE TYPE SECONDARY LOADER

This command initiates a downline load operation over circuit DMC-0, commencing with the secondary loader file.

3 NCP>LOAD VIA UNA-0 PHYSICAL ADDRESS AA-00-04-00-07-04

This command initiates a downline load operation over Ethernet circuit UNA-0, to the target node whose Ethernet physical address is specified in the command.

LOOP CIRCUIT

The LOOP CIRCUIT command tests a specified circuit in the network by causing test blocks of data to be transmitted over the specified circuit. The parameters are optional and can be entered in any order.

FORMAT

LOOP *circuit-component [parameter] [...]*

circuit component

CIRCUIT *circuit-id*

Identifies the circuit for loopback testing. Does not apply to X.25 circuits.

command parameters

ASSISTANT PHYSICAL ADDRESS *E-address*

Applies only to Ethernet circuits. Identifies the Ethernet physical address of the node that will perform the role of loopback assistant for Ethernet third-party loop testing. ASSISTANT PHYSICAL ADDRESS must be specified if HELP is included in this command. The address cannot be a multicast address. This parameter can be used instead of the ASSISTANT NODE parameter.

ASSISTANT NODE *node-id*

Applies only to Ethernet circuits. Identifies the name of the node or the address of the node that will perform the role of loopback assistant for Ethernet third-party loop testing. This parameter can be used instead of the ASSISTANT PHYSICAL ADDRESS parameter.

COUNT *number*

Specifies the number of blocks to be sent during loopback testing over the circuit. The count must be a decimal integer in the range of 1 through 65,535. If the parameter is omitted, only one block is looped.

HELP *help-type*

Applies only to Ethernet circuits. Indicates the amount of assistance to be provided during Ethernet loopback testing by the assistant node, whose address is specified in the ASSISTANT PHYSICAL ADDRESS or node-id as specified in the ASSISTANT NODE parameter. There are three possible values of help-type:

- | | |
|-----------------|---|
| TRANSMIT | The assistant node relays the request to the destination node, which replies directly to the executor node. |
| RECEIVE | The executor node sends the request directly to the destination node, which relays the reply to the assistant node for transmission to the executor node. |
| FULL | The assistant node relays the request and the reply between the executor node and the destination node. |

If HELP is specified, ASSISTANT PHYSICAL ADDRESS or ASSISTANT NODE must also be specified.

LENGTH number

Specifies the length (in bytes) of the blocks to be sent during loopback testing. The length must be a decimal integer in the range of 1 through 65,535. Note that the LENGTH parameter must be less than 50 for the DMC-11 circuit operating in either controller loopback mode or cable loopback (a DMC-11 with an attached loopback cable). If the parameter is omitted, a block length of 40 bytes is used.

NODE node-id

Applies only to Ethernet circuits. Identifies the destination node to be used for loopback testing of the specified Ethernet circuit. Can be used instead of the PHYSICAL ADDRESS parameter.

PHYSICAL ADDRESS E-address

Applies only to Ethernet circuits. Identifies the Ethernet physical address of the destination node to be used for loopback testing of the specified Ethernet circuit.

WITH data-type

Specifies the type of binary information to be sent during testing. If this parameter is omitted, a combination of ones and zeros (the MIXED data type) is sent. The three types of data that can be sent are

MIXED
ONES
ZEROS

EXAMPLES

1 NCP>LOOP CIRCUIT DMC-0 COUNT 5 LENGTH 20

This command initiates a circuit-level loopback test over circuit DMC-0. The software loops five messages, 20 bytes in length with mixed binary information.

2 NCP>LOOP CIRCUIT UNA-0 PHYSICAL ADDRESS AA-00-04-00-FF-04

This command initiates an Ethernet circuit-level loopback test with a node whose Ethernet physical address is AA-00-04-00-FF-04.

3 NCP>LOOP CIRCUIT UNA-0 NODE 224

This command initiates an Ethernet circuit-level loopback test with a node whose address is 224. In this example, the NODE parameter with a node-id value of 224 was used in place of the PHYSICAL ADDRESS parameter.

**4 NCP>LOOP CIRCUIT UNA-0 PHYSICAL ADDRESS -
- AA-00-04-00-12-04 ASSISTANT NODE GULL HELP RECEIVE**

This command initiates an Ethernet circuit-level loopback test by transmitting a message directly to a node whose Ethernet physical address is AA-00-04-00-12-04. Additionally, the command requests the assistance of an Ethernet node named GULL to receive the message from the target node and then relay the message back.

LOOP EXECUTOR

The LOOP EXECUTOR command tests the executor node in the network by causing test data to be transmitted to the executor node. The parameters are optional and can be entered in any order. You can supply explicit access control information for the LOOP EXECUTOR command. This command does not apply to VAX PSI.

FORMAT

LOOP EXECUTOR [parameter] [...]

command parameters

ACCOUNT account

Identifies the user's account for access control verification for the executor node.

COUNT number

Specifies the number of blocks to be sent during loopback testing over the executor node. The count must be a decimal integer in the range of 1 through 65,535. If the parameter is omitted, only one block is looped.

LENGTH number

Specifies the length (in bytes) of the blocks to be sent during loopback testing. The length must be a decimal integer in the range of 1 through 65,535. If the parameter is omitted, a block length of 40 bytes is used.

PASSWORD password

Identifies the user's password for access control verification for the executor node.

USER user-id

Specifies the user's identification for access control verification for the executor node.

WITH data-type

Specifies the type of binary information to be sent during testing. If this parameter is omitted, a combination of ones and zeros (the MIXED data type) is sent. The three types of data that can be sent are

MIXED
ONES
ZEROS

EXAMPLE

NCP>LOOP EXECUTOR

This command initiates a loopback test on the executor node.

LOOP LINE

The LOOP LINE command initiates loopback tests of X.25 lines only. The parameters are optional and can be entered in any order. Before beginning loopback testing of an X.25 line, use the SET LINE command to set the STATE SERVICE and CONTROLLER LOOPBACK parameters for internal loopback testing or the STATE SERVICE and CONTROLLER NORMAL parameters for all other loopback testing.

FORMAT

LOOP *line-component [parameter] [...]*

line component

LINE *line-id*

Applies only to VAX PSI. Identifies the X.25 line for loopback testing. Specify a line name using the dev-c-u format for the line-id.

command parameters

COUNT *number*

Specifies the number of blocks to be sent during loopback testing over the line. The count must be a decimal integer in the range of 1 through 65,535. If the parameter is omitted, only one block is looped.

LENGTH *number*

Specifies the length (in bytes) of the blocks to be sent during loopback testing. The length must be a decimal integer in the range of 1 through 65,535. If the parameter is omitted, a block length of 40 bytes is used.

WITH *data-type*

Specifies the type of binary information to be sent during testing. If this parameter is omitted, a combination of ones and zeros (the MIXED data type) is sent. The three types of data that can be sent are

MIXED
ONES
ZEROS

EXAMPLES

1 NCP>LOOP LINE DUP-0

This command initiates a line-level loopback test over X.25 line DUP-0. The software loops one message, 40 bytes in length, with mixed binary information.

2 NCP>LOOP LINE DUP-1 COUNT 10 WITH ONES

This command initiates a line-level loopback test over X.25 line DUP-1. The software loops 10 messages, 40 bytes in length, with all binary ones information.

LOOP NODE

The LOOP NODE command tests a specified node (other than the executor node) in the network by causing test blocks of data to be transmitted to the node. The parameters are optional and can be entered in any order. You can supply explicit access control information for the LOOP NODE command.

To test the executor node, use the LOOP EXECUTOR command.

FORMAT

LOOP *node-component [parameter] [...]*

**node
component**

NODE node-id

Identifies the node on which the loopback mirror is to run. Does not apply to VAX PSI.

**command
parameters**

ACCOUNT account

Identifies the user's account for access control verification for the designated node.

COUNT number

Specifies the number of blocks to be sent during loopback testing over the node. The count must be a decimal integer in the range of 1 through 65,535. If the parameter is omitted, only one block is looped.

LENGTH number

Specifies the length (in bytes) of the blocks to be sent during loopback testing. The length must be a decimal integer in the range of 1 through 65,535. Note that the LENGTH parameter must be less than 50 for the DMC-11 circuit operating in either controller loopback mode or cable loopback (a DMC-11 with an attached loopback cable). If the parameter is omitted, a block length of 40 bytes is used.

PASSWORD password

Identifies the user's password for access control verification for the designated node.

USER user-id

Specifies the user's identification for access control verification for the designated node.

WITH data-type

Specifies the type of binary information to be sent during testing. If this parameter is omitted, a combination of ones and zeros (the MIXED data type) is sent. The three types of data that can be sent are

MIXED
ONES
ZEROS

EXAMPLE

```
NCP>SET NODE TESTER CIRCUIT DMC-0  
NCP>LOOP NODE TESTER
```

```
NCP>CLEAR NODE TESTER CIRCUIT
```

The first command creates a loop node name (TESTER) for the associated circuit, the second command initiates a node-level loopback test with the loop node name, and the third command removes the loop node name from the volatile database when the loop test is completed.

PURGE MODULE CONFIGURATOR

Use the PURGE MODULE CONFIGURATOR command to remove from the permanent database at the local node the Ethernet configurator module component parameters for the circuit or circuits specified. Note that the word MODULE is optional.

FORMAT

PURGE MODULE CONFIGURATOR
circuit-component ALL

**circuit
components****KNOWN CIRCUITS**

Applies only to Ethernet circuits. Removes from the permanent database at the local node all configurator module parameters related to all known Ethernet circuits.

CIRCUIT *circuit-id*

Applies only to Ethernet circuits. Removes from the permanent database at the local node all configurator module parameters related to the specified circuit.

**command
parameter****ALL**

Removes all parameters for the specified circuit or circuits from the permanent database. The component is no longer recognized by the network.

EXAMPLE

NCP>PURGE MODULE CONFIGURATOR KNOWN CIRCUITS ALL

This command removes from the permanent database at the local node all configurator module parameters related to all known Ethernet circuits.

SET CIRCUIT ALL

The SET CIRCUIT ALL command updates the volatile copy of the database on the local node or DTE with all the circuit parameters stored for a particular circuit or all known circuits in the permanent database on the local node or DTE.

For X.25 circuits provided by VAX PSI, the SET CIRCUIT ALL command updates the volatile database at the local DTE with the circuit parameters stored in the permanent database at the local DTE.

FORMAT

SET *circuit-component ALL*

circuit components

KNOWN CIRCUITS

Instructs NCP to update all parameters for all known circuits.

CIRCUIT *circuit-id*

Instructs NCP to update the parameters for a specific circuit.

EXAMPLE

NCP>SET KNOWN CIRCUITS ALL

This command loads all permanent database entries stored for all known circuits into the volatile database.

NCP

SET/DEFINE CIRCUIT

SET/DEFINE CIRCUIT

The SET CIRCUIT command creates or modifies circuit parameters in the volatile database on the local node or DTE. The DEFINE CIRCUIT command creates or modifies circuit parameters in the permanent database on the local node. The circuit must be in the OFF state before you modify any parameters other than COST, COUNTER TIMER, SERVICE, STATE, or VERIFICATION.

FORMAT

SET *circuit-component parameter [...]*
DEFINE *circuit-component parameter [...]*

circuit components

KNOWN CIRCUITS

Indicates that parameters for all known circuits are to be updated.

CIRCUIT *circuit-id*

Identifies the circuit whose parameters are to be updated.

command parameters

ACTIVE BASE *base*

Applies only to DDCMP CONTROL circuits. This value sets the base priority of an ACTIVE tributary after the tributary has been polled. You can set a separate base for each of the indicated polling states. Base must be a decimal integer from 0 to 255. If not specifically set, the ACTIVE BASE default is 255.

ACTIVE INCREMENT *increment*

Applies only to DDCMP CONTROL circuits. This parameter sets the increment value added to the ACTIVE tributary priority each time the scheduling timer expires. Increment must be a decimal integer from 0 to 255. If not specifically set, the ACTIVE INCREMENT default is 0.

BABBLE TIMER *milliseconds*

Applies only to DDCMP CONTROL circuits. It represents the number of milliseconds that a selected tributary or remote half-duplex station is allowed to transmit. Milliseconds must be a decimal integer in the range 1 to 65,535. The default is 6000 (6 seconds).

BLOCKING *blocking-control*

Applies only to X.25 data link mapping (DLM) circuits. Indicates whether the Routing layer will block messages before they are sent over the circuit. There are two possible values:

- ENABLED Perform blocking as possible
- DISABLED No blocking

CHANNEL *number*

Applies only to X.25 permanent virtual circuits (PVCs). Identifies the logical channel number for the X.25 PVCs. Specify a value in the range 0 to 4095. This parameter is mandatory when you specify an X.25 PVC for the first time.

COST cost

Specifies the routing cost of the circuit. Messages will travel between nodes along the path with the smallest total cost. Cost must be a decimal integer in the range 1 to 25. The default value is 10. Does not apply to X.25 PVCs.

COUNTER TIMER seconds

Specifies the number of seconds that the circuit counter timer will run. When the counter timer expires, a circuit counter logging event occurs. Seconds must be a decimal integer in the range 0 to 65,535. If no value is set for COUNTER TIMER, the circuit counters are not logged automatically.

DEAD THRESHOLD count

Applies only to DDCMP CONTROL circuits. It defines the number of times to poll the active, inactive, or dying tributary before changing that tributary's polling state to DEAD because of receive timeouts. Count must be a decimal integer in the range 0 to 255. The default count is 8.

DTE dte-address

Applies only to X.25 PVCs and DLM circuits. Identifies the local DTE for the circuit. Specify a decimal integer of 1 to 15 digits. See the *VAX PSI Public Network Information Cards* for the format of the address on your network. This parameter is optional for DLM circuits and mandatory when you specify an X.25 PVC for the first time.

DYING BASE base

Applies only to DDCMP CONTROL circuits. This value sets the base priority of a DYING tributary after the tributary has been polled. You can set a separate base for each of the indicated polling states. Base must be a decimal integer from 0 to 255. If not specifically set, the DYING BASE default is 0.

DYING INCREMENT increment

Applies only to DDCMP CONTROL circuits. This parameter sets the increment value added to the DYING tributary priority each time the scheduling timer expires. Increment must be a decimal integer from 0 to 255. If not specifically set, the DYING INCREMENT default is 16.

DYING THRESHOLD count

Applies only to DDCMP CONTROL circuits. It specifies the number of times to poll the active or inactive tributary before changing that tributary's polling state to dying because of receive timeouts. Count must be a decimal integer in the range 0 to 255. The default count is 2.

HELLO TIMER seconds

Specifies the frequency of Routing Hello messages sent to adjacent nodes on the circuit. Seconds must be a decimal integer in the range 0 to 8191. The default value is 15. Does not apply to X.25 PVCs.

INACTIVE BASE base

Applies only to DDCMP CONTROL circuits. This value sets the base priority of an inactive tributary after the tributary has been polled. You can set a separate base for each of the indicated polling states. Base must be a decimal integer from 0 to 255. If not specifically set, the default is 0.

NCP

SET/DEFINE CIRCUIT

INACTIVE INCREMENT increment

Applies only to DDCMP CONTROL circuits. This parameter sets the increment value added to the inactive tributary priority each time the scheduling timer expires. Increment must be a decimal integer from 0 to 255. If not specifically set, the default is 64.

INACTIVE THRESHOLD count

Applies only to DDCMP CONTROL circuits. It specifies the number of times to poll the active tributary before changing that tributary's polling state to inactive because of no data response. Count must be a decimal integer in the range 0 to 255. The default count is 8.

MAXIMUM BUFFERS count

Applies only to DDCMP CONTROL circuits. It specifies the maximum number of buffers from a common buffer pool that the tributary can use. If you do not set this parameter, there is no common buffer pool and the higher level will explicitly supply the buffers. Count must be a decimal integer in the range 1 to 254 or the word UNLIMITED.

MAXIMUM DATA count

Applies only to X.25 PVCs and X.25 DLM circuits. Specifies the maximum packet size for the X.25 circuit. This value must be at least 5 bytes less than the MAXIMUM BLOCK value that you specify in the SET or DEFINE LINE command and must be a power of 2. Specify a value in the range 16 to 4096 bytes. By default, packet size takes the value specified by the PROFILE parameter of the SET or DEFINE MODULE X25-PROTOCOL command. See the VAX PSI Public Network Information Cards for the network value of this parameter.

MAXIMUM RECALLS count

Applies only to X.25 DLM switched virtual circuits (SVCs). Specifies the maximum number of call retries generated automatically on an outgoing DLM circuit.

MAXIMUM ROUTERS number

Applies only to Ethernet circuits. Specifies the maximum number of routers (other than the executor node) allowed by the Routing layer on this circuit. Use a number in the range 1 to 33. The default value is 33.

MAXIMUM TRANSMITS count

Applies only to DDCMP CONTROL circuits. It specifies the maximum number of data messages that can be transmitted at one time. Count must be a decimal integer in the range 1 to 255. The default count is 4.

MAXIMUM WINDOW count

Applies only to X.25 PVCs and X.25 DLM circuits. Specifies the maximum window size allowed for the X.25 circuit—that is, the maximum number of packets for which outstanding acknowledgments are allowed. Specify a value in the range 1 to 127. By default, window size takes the value specified by the PROFILE parameter of the SET or DEFINE MODULE X25-PROTOCOL command. See the VAX PSI Public Network Information Cards for the network value of this parameter.

NETWORK *network-name*

Applies only to X.25 PVCs and X.25 DLM circuits. Specifies the network that the circuit runs through. If only one network is set up, this parameter is not required. Otherwise, the parameter is mandatory.

NUMBER *dte-address*

Applies only to X.25 DLM switched virtual circuits. For outgoing circuits, specifies the remote DTE address and subaddress that this DLM circuit will call. For incoming circuits, specifies the address of the remote DTE from which this circuit will accept calls. If the NUMBER parameter is not specified for an incoming circuit, a call from any remote DTE can be directed to this circuit. Specify a decimal integer of 1 to 15 digits.

OWNER EXECUTOR

Applies only to X.25 DLM circuits. Identifies the circuit owner as the Routing layer. This parameter is mandatory for an X.25 DLM circuit.

POLLING STATE *polling-state*

Applies only to DDCMP CONTROL circuits. Identifies the multipoint polling state of the tributary. The default is AUTOMATIC. There are five possible states:

AUTOMATIC	The tributary's state varies according to the operation of the polling algorithm.
ACTIVE	The tributary is locked in the ACTIVE state.
INACTIVE	The tributary is locked in the INACTIVE state.
DYING	The tributary is locked in the DYING state.
DEAD	The tributary is locked in the DEAD state.

RECALL TIMER *seconds*

Applies only to X.25 DLM switched virtual circuits. Sets a timer whose expiration causes a remote DTE to be called again during an attempt to set up a DLM circuit. Specify a decimal integer in the range 1 to 65,535.

ROUTER PRIORITY *number*

Applies only to Ethernet circuits. Specifies the priority this router (the executor node on this circuit) is to have in the selection of designated router for this circuit. Use a value in the range 0 to 127. The default value is 64.

SERVICE *service-mode*

Specifies whether or not service operations (loading and loop testing) are allowed for the circuit. There are two possible modes:

DISABLED	The circuit may not be put into service state and may not perform service functions. The default mode is DISABLED.
ENABLED	The circuit may be put into service state and perform service functions.

STATE *circuit-state*

Specifies the circuit's operational state (also applies to X.25 circuits). There are three possible states:

NCP

SET/DEFINE CIRCUIT

- | | |
|---------|---|
| OFF | The circuit is not in use. |
| ON | The circuit is available for normal use or service functions. |
| SERVICE | The circuit is available for service functions only. |

TRANSMIT TIMER milliseconds

Defines the number of milliseconds to delay between data message transmits. Milliseconds must be a decimal integer in the range 0 to 65,535. The default is 0.

TRIBUTARY tributary-address

Defines the data link physical tributary address of the circuit. Tributary-address must be a decimal integer in the range 0 to 255.

TYPE X25

Applies only to X.25 circuits. Specifies the type of circuit. For circuit names starting with "X25-", TYPE is always X25.

USAGE usage-type

Applies only to X.25 circuits. Defines the usage type of an X.25 virtual circuit. There are three possible usage types:

- | | |
|-----------|---|
| INCOMING | Applies only to X.25 DLM switched virtual circuits (SVCs). The circuit is used only for incoming calls. |
| OUTGOING | Applies only to X.25 DLM SVCs. The circuit is used only for outgoing calls. |
| PERMANENT | Mandatory for X.25 PVCs. The circuit is permanently connected to a remote DTE and does not need to be switched dynamically. |

VERIFICATION option

Requires the remote node to send its routing initialization password. There are three options:

- | | |
|----------|---|
| DISABLED | Does not require the remote node to send its routing initialization password. This is the default. |
| ENABLED | Requires the remote node to send its routing initialization password. |
| INBOUND | Applies to any DDCMP point-to-point circuit. Specifies that the executor node expects to receive a routing initialization password for verification from a remote node before a connection is made between the nodes. The executor is prohibited from sending its routing initialization password to the remote node. This parameter is specified automatically for dynamic asynchronous DDCMP circuits. If VERIFICATION INBOUND is specified for a circuit, the INBOUND parameter must be specified for the remote node. |

DESCRIPTION

If you plan to run DECnet over a CI, you must first install the driver CNDRIVER. To do this, add the following to the LOADNET.COM command procedure in SYS\$MANAGER:

```
$ RUN SYS$SYSTEM:SYSGEN  
CONNECT CNAO/NOADAPTER
```

Refer to the VAX/VMS *Networking Manual* for a table of circuit parameters grouped according to circuit type.

EXAMPLES

1 NCP>SET CIRCUIT DMC-0 COST 4 STATE ON

This command sets the circuit STATE to ON and the circuit cost to 4 for circuit DMC-0.

2 NCP>SET CIRCUIT UNA-0 STATE ON MAXIMUM ROUTERS 5

This command sets Ethernet circuit UNA-0 to ON and sets the maximum number of routers permitted on the circuit to 5.

3 NCP>DEFINE CIRCUIT X25-ANDIES CHANNEL 3 DTE 123789456 -
- NETWORK PSDND MAXIMUM DATA 128 MAXIMUM WINDOW 2 USAGE PERMANENT

This command defines an X.25 PVC called X25-ANDIES with a logical channel number of 3 on the local DTE with address 123789456 on network PSDND. The circuit has a packet size of 128 bytes and a window size of 2.

4 NCP>DEFINE CIRCUIT X25-DLMO NUMBER 456789012 NETWORK PSDNA -
- USAGE OUTGOING

This command defines a DLM SVC called X25-DLM-0 connected to the remote DTE on network PSDNA with address 456789012, and used only for outgoing calls.

5 NCP>DEFINE CIRCUIT X25-DLM1 NUMBER 12345677 NETWORK PSDNB -
- USAGE INCOMING

This command defines a DLM SVC called X25-DLM-1 on network PSDNB which only accepts incoming calls from the remote DTE with address 12345677.

NCP

SET EXECUTOR ALL

SET EXECUTOR ALL

The SET EXECUTOR ALL command updates the volatile copy of the local node's database with all the local node parameters stored for that node in its permanent database.

FORMAT

**command
parameters**

EXAMPLE

NCP>SET EXECUTOR ALL

SET EXECUTOR ALL

None.

SET/DEFINE EXECUTOR

The SET EXECUTOR command creates or modifies parameters in the volatile database that controls the network on the local node. The DEFINE EXECUTOR command creates or modifies parameters in the permanent database that controls the network on the local node.

Once the local node's state is set ON, you cannot change the ADDRESS, ALIAS NODE, ALIAS INCOMING, BUFFER SIZE, NAME, or TYPE parameters for the local node. If the local node whose state is ON is connected to an Ethernet circuit whose state is ON, you cannot change the MAXIMUM CIRCUITS parameter for the local node.

FORMAT

SET EXECUTOR *parameter [...]*
DEFINE EXECUTOR *parameter [...]*

command parameters

ADDRESS *node-address*

Establishes a node address for the local node, in the form

area-number.*node-number*

where the area-number is in the range 1 to 63 and the node-number is in the range 1 to 1023. If the area-number is not specified, a default value of 1 is assumed. You need not supply the area number in the node-address if your node is in area 1. This parameter is required when you configure the local node.

ALIAS INCOMING *option*

Specifies whether the local node is willing to accept incoming connect requests directed to the alias node identifier specified for the local node. The alias node identifier is described under the ALIAS NODE parameter. There are two options for ALIAS INCOMING:

ENABLED

Specifies that the local node will accept incoming connect requests directed to the alias node identifier. This is the default if an alias node identifier has been specified.

DISABLED

Specifies that the local node will not accept incoming connect requests directed to the alias node identifier.

ALIAS MAXIMUM LINKS *number*

Specifies the maximum number of logical links for the local node that can use the alias node identifier. The alias node identifier is described under the ALIAS NODE parameter. The maximum value for ALIAS MAXIMUM LINKS is 200. The default value is 32. If this parameter is specified, the maximum value permitted for the MAXIMUM LINKS parameter for the local node is reduced.

NCP

SET/DEFINE EXECUTOR

ALIAS NODE *node-id*

Establishes a cluster alias node identifier for use by the local node. The node-id is a DECnet node identifier that can be either a node-name or a node-address. This alias permits the local node to be associated with a cluster node identifier common to some or all nodes in the cluster, in addition to its own unique node-id. If this parameter is not specified, the local node is not associated with a cluster alias node identifier. If a node-name is to be used as the alias node-id, the node-name must previously have been defined in the database.

AREA MAXIMUM COST *number*

Applies only to an executor node whose type is AREA. Specifies the maximum total path cost allowed from the executor to any other level 2 routing node. You can specify a decimal value in the range 1 to 1022. The default value is 1022.

AREA MAXIMUM HOPS *number*

Applies only to an executor node whose type is AREA. Specifies the maximum number of routing hops allowable from the executor to any other level 2 routing node. You can specify a decimal value in the range 1 to 30. The default is 30.

BROADCAST ROUTING TIMER *seconds*

Specifies the maximum amount of time allowed between routing updates on Ethernet circuits. When the timer expires before a routing update occurs, a routing update is forced. The routing update produces a routing configuration message for each adjacent node. You can specify a number in the range 1 to 65,535. The default value is 40.

BUFFER SIZE *number*

Specifies in bytes the size of the receive buffers, thereby controlling the maximum size of NSP message segment that can be received and forwarded. (The size includes protocol overhead down to and including the End Communication layer, but does not include Routing layer or Data Link layer overhead.) This buffer size applies to all circuits known to the executor. Use a value in the range 1 to 65,535. The default value is equal to the value of the SEGMENT BUFFER SIZE if specified; otherwise the default is 576.

COUNTER TIMER *seconds*

Specifies a timer whose expiration causes a node counter logging event.

DEFAULT ACCESS *option*

Assigns the default access to all nodes that do not have a specific node ACCESS entry in the volatile database. There are four options:

INCOMING	Allows logical link connections from the remote node.
OUTGOING	Allows the local node to initiate connections to the remote node, but does not allow connections from the remote node.
BOTH	Allows incoming and outgoing logical link connections. This is the default.

NONE Does not allow incoming or outgoing logical link connections to this node.

If you have OPER privilege on the local system, you can override the default access restriction specified in this parameter.

DEFAULT PROXY option

Assigns the default proxy to the executor node. There are four options:

INCOMING	Allows proxy login access from the remote node to the local node.
OUTGOING	Allows the local node to initiate proxy login access to the remote node, but does not allow proxy login access from the remote node to the local node.
BOTH	Allows both incoming and outgoing proxy login access. This is the default and the recommended default proxy option.
NONE	Does not allow incoming or outgoing proxy login access connections to this node.

DELAY FACTOR number

Specifies the number by which to multiply one-sixteenth of the estimated round trip delay to a node to set the retransmission timer to that node. Use a number in the range 1 to 255. If you do not set this parameter, the default value is 80.

DELAY WEIGHT number

Specifies the weight to apply to a new round-trip delay data point when updating the estimated round trip-delay to a node. Use a number in the range of 1 to 255. If you do not set this parameter, the default value is 5.

IDENTIFICATION id-string

Is a text string that describes the executor node (for example, "VMS Host System"). The string can be a maximum of 32 characters. If it contains blanks or tabs, you must enclose the string in quotation marks. If you do not set this parameter, the default value is DECnet-VAX V4.n VMS X4.n.

INACTIVITY TIMER seconds

Specifies the maximum duration of inactivity (no data in either direction) on a logical link before the node checks to see if the logical link still works. If you do not set this parameter, the default value is 60.

INCOMING TIMER seconds

Specifies the maximum amount of elapsed time between the time a connection is received for a process and the time that process accepts or rejects the connection. For very busy systems, use a value in the range of 45 to 60 seconds. Otherwise use a value of 30 seconds. The default value is 45.

MAXIMUM ADDRESS number

Defines the largest node address and, consequently, the greatest number of nodes that can be addressed by the local node. Use as small a number as possible. The default value is 32.

NCP

SET/DEFINE EXECUTOR

If you receive an "invalid value" error, you probably have not allocated enough nonpaged pool space. You must lower the MAXIMUM ADDRESS value or increase the VAX/VMS NPAGEDYN value. (Use the System Generation Utility to change the NPAGEDYN parameter.)

MAXIMUM AREA number

Applies only to an executor node whose type is AREA. Specifies the largest area number and, therefore, the greatest number of areas that can be known about by the executor node's Routing layer. You can specify a decimal value in the range 1 to 63. The default is 63.

MAXIMUM BROADCAST NONROUTERS number

Specifies the maximum total number of nonrouting nodes (end nodes) the executor node can have on its Ethernet circuits. Use a number in the range of 0 to 65,535. The default value is 64.

MAXIMUM BROADCAST ROUTERS number

Specifies the maximum total number of routers the executor node can have on its Ethernet circuits. Use a number in the range of 0 to 65,535. The default value is 32.

MAXIMUM BUFFERS number

Specifies the maximum number of buffers in the transmit buffer pool. DECnet normally allocates only what it needs. At minimum, use a value that is 15 times the square root of the number of lines. Increase this value if you experience congestion loss. The default value is 100.

MAXIMUM CIRCUITS number

Defines the maximum number of routing circuits that the local node can use. The number must be in the range 1 to 32. The default value is 16.

MAXIMUM COST number

Specifies the maximum total path cost allowed from the local node to any node. The path cost is the sum of the circuit costs along a path between two nodes. Use as small a number as possible in the range of 1 to 1022. The default is 1022.

MAXIMUM HOPS number

Specifies the maximum routing hops from the local node to any other reachable node. A hop is the logical distance over a circuit between two adjacent nodes. Use as small a number as possible in the range of 1 to 30, and be sure that this value is less than or equal to the MAXIMUM VISITS parameter. The default value is 30.

MAXIMUM LINKS number

Specifies the maximum logical link count for the local node. A reasonable range for most networks is 25 to 50. The maximum value for MAXIMUM LINKS is 960; this value is reduced to 512, however, if the ALIAS MAXIMUM LINKS parameter is also specified. The default value of MAXIMUM LINKS is 32.

MAXIMUM VISITS number

Specifies the maximum number of nodes a message can visit before it is received by the destination node. Use a number in the range of the value of the MAXIMUM HOPS parameter to 63. It is suggested that you specify a number that is twice the MAXIMUM HOPS value. The default value is 63.

NAME node-name

Specifies the node name to be associated with the executor node identification. Only one name can be assigned to a node address or node identification.

NONPRIVILEGED item

Specifies nonprivileged inbound access control information for the node, where

ACCOUNT account	Identifies the account for the default nonprivileged DECnet account on the executor node
PASSWORD password	Identifies the password for the default nonprivileged DECnet account on the executor node
USER user-id	Identifies the user name for the default nonprivileged DECnet account on the executor node

OUTGOING TIMER seconds

Specifies timeout value for the elapsed time between the moment a connection is requested and the moment that connection is acknowledged by the destination node. It is recommended that you use a value in the range of 30 to 60 seconds. The default value is 45.

PIPELINE QUOTA quota

Specifies the maximum number of bytes of nonpaged pool that NSP will use for transmission over logical links. Use this parameter for multibuffering at the NSP level. The default value is 3000 bytes. For satellite communications, a value of 6000 or greater is recommended.

PRIVILEGED item

Specifies privileged inbound access control information for the node, where

ACCOUNT account	Identifies the account for the default privileged DECnet account on the executor node
PASSWORD password	Identifies the password for the default privileged DECnet account on the executor node
USER user-id	Identifies the user name for the default privileged DECnet account on the executor node

These parameters are not needed unless the PRIVILEGES parameter is used explicitly in the object database.

RETRANSMIT FACTOR number

Defines the maximum number of times any given message (except a connect initiate message) will be retransmitted before the logical link is disconnected. If you do not set this parameter, the default value is 10.

NCP

SET/DEFINE EXECUTOR

ROUTING TIMER seconds

Specifies the maximum amount of elapsed time before a routing update is forced on non-Ethernet circuits. The routing update produces a routing configuration message for each adjacent node. You can use a number in the range of 1 to 65,535. If you do not set this parameter, the default value is 600.

SEGMENT BUFFER SIZE number

Specifies in bytes the maximum size of transmit buffers, thereby controlling the maximum size NSP message segment that can be transmitted. (This value is the maximum size message the End Communications layer can transmit; it does not include Routing layer or Data Link layer overhead.) Use a value in the range 1 to 65,535. The default value is equal to the value of the BUFFER SIZE if specified; otherwise the default is 576.

The SEGMENT BUFFER SIZE is always less than or equal to the BUFFER SIZE. The two values are normally equal but may differ to permit the network manager to alter buffer sizes on all nodes without interruption of service.

STATE node-state

Specifies the operational state of the local node. There are four possible states:

OFF	Allows no new logical links, terminates existing links, and stops route-through traffic
ON	Allows logical links
RESTRICTED	Allows no new inbound links from other nodes
SHUT	Allows no new logical links, does not destroy existing links, and goes to the OFF state when all logical links are gone

If you have OPER privilege, you can override the state value specified in this parameter.

SUBADDRESSES range

Applies only to VAX PSI. Specifies a range of local DTE subaddresses that the Routing layer will accept as X.25 DLM calls. VAX PSI will route all incoming X.25 calls within the specified subaddress range to the Routing layer to be handled as DLM calls.

TYPE node-type

Indicates the type of the executor node. Possible node types are

ROUTING IV
NONROUTING IV
AREA

The default depends upon the DECnet-VAX license installed. If the full function kit is installed, the default is ROUTING IV; if the end node kit is installed, the default (and only possible value) is NONROUTING IV.

A routing node has full routing capability. A nonrouting node (or end node) can deliver packets to or receive them from any node, but cannot route packets from other source nodes through to destination nodes.

An area node is a level 2 router that can route packets between areas.

DESCRIPTION

You can use the SET and DEFINE EXECUTOR commands to create or modify local node parameters, including certain parameters common to both the local and remote nodes. Refer to the *VAX/VMS Networking Manual* for a table of node parameters that indicates those used for the local node only and those common to the local and remote nodes.

EXAMPLES

1 NCP>SET EXECUTOR ADDRESS 2.11

This command sets the local node's address to 2.11.

2 NCP>SET NODE 2.13 NAME CLUSTR

NCP>SET EXECUTOR ALIAS NODE CLUSTR

The SET NODE command establishes a node address 2.13 with the associated node name CLUSTR. The SET EXECUTOR ALIAS NODE command then establishes the node name CLUSTR as the alias node identifier.

3 NCP>SET EXECUTOR ALIAS INCOMING ENABLED

This command specifies that incoming connect requests directed to the alias node identifier are permitted.

4 NCP>SET EXECUTOR ADDRESS 11

NCP>SHOW EXECUTOR SUMMARY
Node Volatile Summary as of 15-FEB-1986 15:40:20
Executor node = 1.11 (BOSTON)
State = off
Identification = VMS HOST SYSTEM

This command set the local node's address to 1.11. As the display indicates, a default value of 1 is assumed by the system if the area-number is not specified.

5 NCP>SET EXECUTOR STATE ON

This command turns on the local node.

6 NCP>SET EXECUTOR NAME BOSTON

This command sets the local node's name to BOSTON.

NCP

SET EXECUTOR NODE

SET EXECUTOR NODE

The SET EXECUTOR NODE command sets the default executor for all NCP commands. The executor is the node on which the network management listener (NML) runs to perform these commands.

FORMAT

command parameters

SET EXECUTOR parameter [...]

NODE node-spec

Specifies a node name or address optionally followed by access control information as specified for VAX/VMS. Use one of the following formats:

`node-id
node-id"user password account"`

The node-spec may be a logical name. It is possible to override access control in a logical name with explicit access control information in the command.

Associate any or all of the following optional access control parameters with the NODE node-spec parameter:

ACCOUNT account	Identifies the user's account for access control verification at the designated executor node.
PASSWORD password	Identifies the user's password for access control verification at the designated executor node.
USER user-id	Identifies the user's identification for access control verification at the designated executor node.

DESCRIPTION

For this command, you must enter the command verb SET EXECUTOR followed by NODE node-spec parameter. You can then enter the optional access control parameters in any order.

Also, if you have implemented area routing on your node and you specify a node address, you must use the area-number prefix with the node address. Refer to the examples below.

If the SET EXECUTOR NODE command fails, you must explicitly use the CLEAR EXECUTOR NODE command or the SET EXECUTOR NODE command with a different node name or address; otherwise, NCP will continue to try to establish a logical link to NML running on the first executor node that is named.

EXAMPLES

1 NCP>**SET EXECUTOR NODE 5.14**

.....

NCP>**CLEAR EXECUTOR NODE**

The first command sets the executor to node 5.14. The second resets the executor to the local node.

NCP

SET EXECUTOR NODE

2 NCP>SET EXECUTOR NODE 14"GRAY MARY"

This command uses access control information to set the executor node to node 1.14. This example assumes a default area number of 1 for the executor node.

3 NCP>SET EXECUTOR NODE TRNTO USER GRAY PASSWORD MARY

This command uses an alternate access control format to set the executor to node TRNTO.

4 NCP>SET EXECUTOR NODE O"GRAY MARY"

This command uses access control information to cause NML run under user GRAY's current privileges instead of the privileges of the NCP user.

5 \$ DEFINE NODE\$MY TRNTO""GRAY MARY"""
\$ RUN SYS\$SYSTEM:NCP
NCP>SET EXECUTOR NODE NODE\$MY

The first command defines a logical name (NODE\$MY) for the given node-spec. Once running NCP, you can use this logical name with the SET EXECUTOR NODE command. Note that you must use three sets of quotation marks to delimit access control information (if supplied) in the node-spec for this example.

NCP

SET LINE ALL

SET LINE ALL

The SET LINE ALL command updates the volatile database on the local node or DTE with all the line parameters stored for a particular line in the permanent database on the local node or DTE.

FORMAT

SET *line-component ALL*

line components

KNOWN LINES

Indicates that all parameters for all known lines are to be updated.

LINE *line-id*

Identifies the line whose parameters are to be updated.

EXAMPLE

NCP>SET KNOWN LINES ALL

This command loads all permanent database entries stored for all known lines into the volatile database.

SET/DEFINE LINE

The SET LINE command creates or modifies line parameters in the volatile database on the local node or DTE. The DEFINE LINE command creates or modifies line parameters in the permanent database on the local node or DTE. A line must be in the OFF state in order to change all but the COUNTER TIMER, SERVICE TIMER, and STATE parameters.

FORMAT

SET *line-component parameter [...]*
DEFINE *line-component parameter [...]*

line components

KNOWN LINES

Indicates that the specified parameters for all known lines are to be created or modified in the volatile database.

LINE *line-id*

Identifies the line for which specified parameters are to be created or modified in the volatile database.

command parameters

BUFFER SIZE *number*

Specifies in bytes the size of receive buffers for the specified line, thereby controlling the maximum size of NSP message segments that can be received from or forwarded to an adjacent node which has accepted the line buffer size. Use a value in the range 1 to 65,535. For Ethernet lines, a default value of 1498 bytes is provided. For all other types of lines, the default is the executor BUFFER SIZE value (as specified in the SET EXECUTOR command). The parameter does not apply to X.25 lines.

The line parameter BUFFER SIZE may be used to increase the size of NSP messages for logical links over this line.

CLOCK *clock-mode*

Specifies the hardware clock mode for the line. There are two values for clock-mode:

- | | |
|----------|---|
| INTERNAL | For use of the clock in test mode. Setting this value causes the line device to supply a clock signal that will allow all transmitted messages to be looped back from outside the device. Note that in order to use this parameter, the operator may have to connect a loopback plug in place of the normal line. |
| EXTERNAL | For normal clock operating mode. The clock signal is supplied externally to the controller. |

Does not apply to X.25 or Ethernet lines.

NCP

SET/DEFINE LINE

CONTROLLER mode

Specifies the controller mode for the line. There are two possible modes:

LOOPBACK Internal device loopback mode

NORMAL Normal operating mode, which is the default

COUNTER TIMER seconds

Specifies a timer whose expiration causes a line counter logging event. Specify a decimal integer in the range 1 to 65,535.

DEAD TIMER milliseconds

Applies only to DDCMP CONTROL lines. Specifies the number of milliseconds between polls of one of the set of dead tributaries. Milliseconds must be a decimal integer in the range 1 to 65,535. The default is 10,000 (10 seconds).

DELAY TIMER milliseconds

Applies only to DDCMP CONTROL lines. Defines the minimum number of milliseconds to delay between polls. This timer limits the effect of a very fast control station on slower tributaries. Milliseconds must be a decimal integer in the range 1 to 65,535. If you do not set this parameter, there is no delay.

DUPLEX mode

Specifies the hardware duplex mode of the line. There are two possible modes:

HALF Half-duplex

FULL Full-duplex (default)

Does not apply to X.25 or Ethernet lines.

HANGUP option

Applies only to asynchronous DDCMP lines. Indicates whether the modem signals are dropped when the line is shut down. The two values of the option are

ENABLED Indicates that modem signals should be dropped when the line is shut down.

DISABLED Indicates that modem signals should not be dropped when the line is shut down. This is the default for static asynchronous DDCMP lines.

This parameter is supplied automatically for dynamic asynchronous DDCMP lines. The default is HANGUP ENABLED if the /HANGUP qualifier was specified for the DCL command SET TERMINAL and HANGUP DISABLED if /NOHANGUP was specified.

INTERFACE interface-code

Applies only to X.25 lines and the ISO8208 profile. Specifies the way in which the processor acts when it uses the line. There are two values for the interface-code:

- | | |
|-----|---|
| DTE | Specifies that the processor operates as a DTE. |
| DCE | Specifies that the processor operates as a DCE. |

The default code is DTE.

LINE SPEED number

Applies only to asynchronous DDCMP lines. Specifies the speed of the line in baud. This parameter must be set to the same value on both sides of an asynchronous DDCMP connection. It is specified automatically for dynamic asynchronous DDCMP lines. If not specified, the value of this parameter is equal to the current speed of the line.

MAXIMUM BLOCK count

Applies only to X.25 lines. Specifies the maximum size in bytes of the frame for the line. This value must be at least 5 bytes larger than the maximum packet size you specify in the SET CIRCUIT (for PVCs and DLM circuits) or SET MODULE X25-PROTOCOL (for SVCs) commands. Specify a value in the range 21 to 4103. By default, the size of the frame takes the value specified by the PROFILE parameter of the SET MODULE X25-PROTOCOL command. See the *VAX PSI Public Network Information Cards* for the network value of this parameter.

MAXIMUM RETRANSMITS count

Applies only to X.25 lines. Specifies the maximum number of retransmissions of a frame on the specified line. Specify a value in the range 1 to 255. By default, the retransmission value takes the value specified by the PROFILE parameter of the SET MODULE X25-PROTOCOL command. See the *VAX PSI Public Network Information Cards* for the network value of this parameter.

MAXIMUM WINDOW count

Applies only to X.25 lines. Specifies the maximum number of frames for which outstanding acknowledgments are allowed. Specify a value in the range 1 to 127. By default, the outstanding frame value takes the value specified by the PROFILE parameter of the SET MODULE X25-PROTOCOL command. See the *VAX PSI Public Network Information Cards* for the network value of this parameter.

MICROCODE DUMP file-spec

Applies only to X.25 lines. Dumps the microcode of the specified KMS-11 /KMV-11 device to the indicated file. By default, the output file takes the format

`SYS$SYSROOT:[SYSERR]fileid.DMP`

The KMS/KMV Dump Analyzer (PSIKDA) is the utility program used to process the dump file created by the MICROCODE DUMP parameter. Refer to the *VAX PSI Problem Solving Guide* for more information about PSIKDA.

NCP

SET/DEFINE LINE

NETWORK network-name

Applies only to X.25 lines. Specifies the network to which the line is connected. If only one network is set up, that network is the default. Otherwise, the NETWORK parameter is mandatory.

PROTOCOL protocol-name

Defines the Data Link protocol to be used on this line. There are seven values for protocol-name:

DDCMP CONTROL	Specifies this line as a multipoint control station. You can specify multiple circuits for CONTROL lines, but each circuit must have a unique physical tributary address.
DDCMP DMC	Specifies that this line is in DMC emulator mode. DMC is similar to POINT, except that DMC uses an older version of DDCMP (Version 3.2). This protocol should be set for the local line when the remote line is a DMC.
DDCMP POINT	Defines this line as one end of a point-to-point DDCMP connection. You may specify only one circuit per POINT line.
DDCMP TRIBUTARY	Specifies that this line is a tributary end of a DDCMP multipoint group. You may specify only one circuit per TRIBUTARY line.
LAPB	Specifies that the line uses the X.25 level 2 protocol. The line must be a line for the X25-PROTOCOL module.
LAPBE	Specifies that the line uses the X.25 level 2 protocol with extended sequencing. The line must be used by the X25-PROTOCOL module.
ETHERNET	Specifies that this line uses the Ethernet protocol.

Default line protocols based on line names are listed below.

CI	No protocol specified
DMC/DMR	DDCMP POINT
DMF	DDCMP POINT
DMP	DDCMP POINT
DMV	DDCMP POINT
DUP/DPV	LAPB
KMV	LAPB
KMX	LAPB
KMY	LAPB
QNA	ETHERNET
UNA	ETHERNET

RECEIVE BUFFERS number

Specifies the length of the line's receive queue. Use a value in the range of 1 to 32. A value in the range of 2 to 4 is adequate for line speeds of less than 56 kilobits/second. Line speeds of 1 megabit/second may require eight or more buffers depending on the observed error rate. For X.25 lines, specify a value in the range 2 to 32. The default is 4, which is normally adequate for DUP and DMF lines. However, note that KMX, KMY and KMV lines can use 8 buffers.

RETRANSMIT TIMER milliseconds

For a DDCMP multipoint line, specifies the maximum amount of time allowed to elapse before a retransmission is necessary. This is the amount of time a control station will wait for a tributary to respond. The number of milliseconds must be specified by a decimal integer in the range 1 to 65,535. The default value is the network default. Does not apply to Ethernet lines.

For an X.25 line, this parameter specifies the time before a frame is retransmitted. By default, the time takes the value specified by the PROFILE parameter of the SET MODULE X25-PROTOCOL command. See the VAX PSI Public Network Information Cards for the network value of this parameter.

SCHEDULING TIMER milliseconds

Applies only to DDCMP CONTROL lines. Specifies the number of milliseconds between recalculation of tributary polling priorities. The number of milliseconds must be specified by a decimal integer in the range 50 to 65,535. The default is 50.

SERVICE TIMER milliseconds

Specifies the maximum amount of time allowed to elapse before a receive request completes while performing service operations on a line. The default value is 4000 (4 seconds).

STATE line-state

Specifies the line's operational state. There are three possible states:

- | | |
|---------|---|
| OFF | The line is not in use. |
| ON | The line is available for normal use or service functions. |
| SERVICE | The line is available for active service functions. Applies only to X.25 lines. |

STREAM TIMER milliseconds

Applies only to DDCMP CONTROL lines. Defines the number of milliseconds that a tributary or half-duplex remote station is allowed to hold the line. The number of milliseconds must be specified by a decimal integer in the range 0 to 65,535. The default is 1000 (1 second).

SWITCH option

Applies only to asynchronous DDCMP lines. Forces the line currently being used as a DECnet asynchronous communications line to be converted back to a terminal line. The two values of this option are

- | | |
|----------|---|
| ENABLED | The line is switched to a terminal line after it is disconnected from the network (when the channel to the network is deassigned). This is the default for dynamic lines. |
| DISABLED | The line is not switched to a terminal line. This is the default for static lines. |

NCP

SET/DEFINE LINE

TRANSMIT PIPELINE count

Applies only to DMR11 lines. Specifies the maximum number of DDCMP messages for which outstanding acknowledgments are allowed. Specify a value in the range 1 to 32. By default, the value for outstanding DDCMP messages is 7. To avoid excessive use of system memory, do not arbitrarily set this value higher than necessary. Refer to the VAX/VMS Networking Manual for the procedure for determining an optimum TRANSMIT PIPELINE value.

DESCRIPTION

Note that no protocol is specified for a CI line. The CI uses its own private protocols for communication between nodes. If you plan to run DECnet over a CI, you must install the driver CNDRIVER. To do this, add the following to the LOADNET.COM command procedure in SYS\$MANAGER:

```
$ RUN SYS$SYSTEM:SYSGEN  
CONNECT CNAO/NOADAPTER
```

Refer to the VAX/VMS Networking Manual for a table of line parameters grouped according to line type.

EXAMPLES

1 NCP>SET LINE UNA-0 STATE ON

This command sets Ethernet line UNA-0 to the ON state.

2 NCP>SET LINE DMC-0 DUPLEX FULL STATE ON

This command sets line DMC-0 to the ON state in full duplex mode.

3 NCP>SET LINE DMC-0 PROTOCOL DDCMP POINT

This command sets the line protocol to DDCMP POINT for line DMC-0.

**4 NCP>SET LINE DUP-1 -
- RETRANSMIT TIMER 500 MAXIMUM RETRANSMITS 10 -
- MAXIMUM BLOCK 133 MAXIMUM WINDOW 2 STATE ON**

This command sets up a line called DUP-1 that uses the LAPB protocol and has an associated DUP11-DA synchronous line interface with controller number 1. If a frame is not acknowledged within 500 milliseconds it is retransmitted, and this operation is to be performed a maximum of 10 times. The maximum frame size is 133 bytes, and the maximum number of frames for which outstanding acknowledgments are allowed is two. The line is operational.

5 NCP>SET LINE KMX-0-0 MICROCODE DUMP BARRY

This command dumps the microcode of the KMX to the file SYS\$SYSROOT:[SYSERR]BARRY.DMP

6 NCP>SET LINE KMV-0 NETWORK PSS STATE ON

This command sets up the line KMV-0 to the PSS network.

SET LOGGING ALL

The SET LOGGING ALL command updates the volatile copy of the database on the executor node with all the logging parameters stored for the logging component in the permanent database on the executor node.

For VAX PSI, the SET LOGGING ALL command updates the volatile database at the local DTE with the logging parameters for the logging component in the permanent database at the local DTE.

FORMAT

logging components

SET *logging-component ALL*

KNOWN LOGGING

Indicates that all parameters for all known logging sinks are to be updated.

LOGGING CONSOLE

Indicates that all parameters for the logging console are to be updated.

LOGGING FILE

Indicates that all parameters for the logging file are to be updated.

LOGGING MONITOR

Indicates that all parameters for the logging monitor are to be updated.

EXAMPLE

NCP>SET LOGGING CONSOLE ALL

This command loads all permanent database entries stored for the logging console into the volatile database.

SET/DEFINE LOGGING EVENTS

The SET LOGGING EVENTS command creates or modifies source-related logging parameters in the volatile database on the local node or DTE. The DEFINE LOGGING EVENTS command creates or modifies source-related logging parameters in the permanent database on the local node or DTE.

The logging state (in the SET/DEFINE LOGGING STATE command) must be set to ON for all logging. Source-related and sink-related parameters are mutually exclusive; you cannot use parameters from both categories in a single command.

FORMAT

SET *logging-component parameter [...]*
DEFINE *logging-component parameter [...]*

**logging
components****KNOWN LOGGING**

Indicates that the specified parameters for all known logging are to be created or modified in the database.

LOGGING CONSOLE

Indicates that the specified parameters for the logging console are to be created or modified in the database.

LOGGING FILE

Indicates that the specified parameters for the logging file are to be created or modified in the database.

LOGGING MONITOR

Indicates that the specified parameters for the logging monitor are to be created or modified in the database.

**command
parameters****EVENTS event-list****KNOWN EVENTS**

Indicates a specific event or all known events to be logged. This parameter may be followed by one or more of the following source-related parameters:

CIRCUIT circuit-id

Identifies the circuit from which events are logged.

LINE line-id

Identifies the line from which events are logged.

NCP

SET/DEFINE LOGGING EVENTS

MODULE name	Indicates that the logging parameters for the specified source are to be created or modified in the database. Possible module names are
	X25-PROTOCOL
	X25-SERVER
	X29-SERVER
	X25-ACCESS
NODE node-id	Identifies the node from which events are logged.
SINK node	Identifies the node that is to receive events (does not apply to VAX PSI). There are two possibilities: EXECUTOR Identifies the local node (default) NODE node-id Identifies a node in the network

DESCRIPTION

Refer to the *VAX/VMS Networking Manual* for a table of the source-related parameters used with the SET/DEFINE LOGGING EVENTS command. For a summary of event class and types and information about specific events that VAX/VMS will log, refer to the Supplemental NCP Information Section.

EXAMPLES

1 NCP>SET LOGGING MONITOR LINE DMC-1 KNOWN EVENTS

This command causes all events for line DMC-1 to be logged on the console.

2 NCP>SET LOGGING CONSOLE KNOWN EVENTS SINK NODE TRNTO

This command causes all events generated locally to be logged to the logging console on remote node TRNTO.

NCP

SET/DEFINE LOGGING STATE

SET/DEFINE LOGGING STATE

The SET LOGGING STATE command creates or modifies sink-related logging parameters in the volatile database on the local node or DTE. The DEFINE LOGGING STATE command creates or modifies sink-related logging parameters in the permanent database on the local node or DTE. The STATE parameter is required for all logging.

FORMAT

SET *logging-component parameter [...]*
DEFINE *logging-component parameter [...]*

logging components

KNOWN LOGGING

Indicates that the specified parameters for all known logging are to be created or modified in the database.

LOGGING CONSOLE

Indicates that the specified parameters for the logging console are to be created or modified in the database.

LOGGING FILE

Indicates that the specified parameters for the logging file are to be created or modified in the database.

LOGGING MONITOR

Indicates that the specified parameters for the logging monitor are to be created or modified in the database.

command parameters

NAME *sink-name*

Identifies the name of a console, file, or monitor program to which events will be logged. For the monitor sink, all network operator terminals (enabled by the command REPLY/ENABLE=NETWORK) receive formatted events. You can change this parameter only if the sink is in the OFF state.

STATE *sink-state*

Specifies the operational state of the sink. There are three possible states:

HOLD The sink is temporarily unavailable and events are queued.

OFF The sink is unavailable for receiving events; they are discarded.

ON The sink is available for receiving events.

DESCRIPTION

Refer to the VAX/VMS Networking Manual for a table of sink-related logging parameters and their functions.

EXAMPLES

1 NCP>SET LOGGING CONSOLE NAME SYS\$MANAGER:EVENTS.LOG

This command establishes a logging file, EVENTS.LOG, on the local node.

2 NCP>SET LOGGING MONITOR STATE ON

This command turns on logging to OPCOM, the default VAX/VMS monitor. All operator terminals that were previously declared as network operator terminals (with REPLY/ENABLE=NETWORK) will now receive all formatted events.

NCP

SET/DEFINE MODULE CONFIGURATOR

SET/DEFINE MODULE CONFIGURATOR

Use the SET MODULE CONFIGURATOR command to create or modify the parameters of the Ethernet configurator module component in the volatile database at the local node on an Ethernet circuit. Use the DEFINE MODULE CONFIGURATOR command to create or modify the parameters of the configurator module component in the permanent database. A qualifier must be specified following the CONFIGURATOR command verb. Note that the word MODULE is optional.

The configurator module constructs a list of systems active on the Ethernet circuits specified.

FORMAT

SET MODULE CONFIGURATOR [qualifier]
parameter
DEFINE MODULE CONFIGURATOR [qualifier]
parameter

qualifiers

KNOWN CIRCUITS

Applies only to Ethernet circuits. Specifies that configurator information on all known Ethernet circuits is to be stored in the volatile database.

CIRCUIT *circuit-id*

Applies only to Ethernet circuits. Specifies that configurator information on the circuit identified by circuit-id is to be stored in the volatile database.

command parameters

ALL

Copies configurator module information from the permanent database into the volatile database at the local node.

SURVEILLANCE *control*

Indicates whether or not a list of active systems is to be kept for the Ethernet circuit or circuits specified. There are two control values:

DISABLED The list is not to be kept. This is the default value.

ENABLED The list is to be kept.

EXAMPLES

1 NCP>SET MODULE CONFIGURATOR KNOWN CIRCUITS -
- SURVEILLANCE ENABLED

This command specifies that a list of active systems on all known Ethernet circuits is to be kept.

SET/DEFINE MODULE CONFIGURATOR

2 NCP>SET CONFIGURATOR CIRCUIT UNA-0 SURVEILLANCE ENABLED

This command specifies that a list of active systems on Ethernet circuit UNA-0 is to be kept.

3 NCP>SET MODULE CONFIGURATOR ALL

This command loads all permanent database entries for the configurator module into the volatile database at the local node.

NCP

SET/DEFINE MODULE X25-ACCESS

SET/DEFINE MODULE X25-ACCESS

Use the SET MODULE X25-ACCESS and DEFINE MODULE X25-ACCESS commands to associate the host node with the specified multihost connector node for the purpose of accessing a specified X.25 network. Note that the word MODULE is optional.

FORMAT

SET MODULE X25-ACCESS *qualifier parameter [...]*
DEFINE MODULE X25-ACCESS *qualifier parameter [...]*

qualifiers

NETWORK *network-name*
KNOWN NETWORKS

Identifies the name of a network or all known networks to be accessed by the host node. The network name must be the same network name specified on the multihost node to which the access node connects. After you specify the network qualifier, you must include the NODE parameter, and, optionally, one or more of the access control parameters listed below.

ACCOUNT account	Identifies the user account for use when connecting to the multihost connector node. Specify a string of from 1 to 39 characters. By default, no account is used.
ALL	Copies the access parameters from the permanent database into the volatile database. Use this parameter only with the SET MODULE X25-ACCESS command.
NODE node-id	Identifies a multihost connector node that is connected to the PSDN that you want to access. When you specify an X25-ACCESS network for the first time, this parameter is mandatory.
PASSWORD password	Specifies the password for use by the access routines when connecting to the multihost connector node. Specify a string of from 1 to 39 characters. The default is that no password is used.
USER user-id	Specifies the user identification for use by the access routines in connecting to the multihost connector node. Specify a string of from 1 to 16 characters. The default is that no user identification is used.

NCP

SET/DEFINE MODULE X25-ACCESS

EXAMPLES

1 NCP>SET MODULE X25-ACCESS NETWORK TELENET1 NODE FRED
NCP>SET MODULE X25-ACCESS NETWORK PSS1 NODE GINGER

These two commands allow users on the host node to access the network called TELENET1 through node FRED, and the network called PSS1 through node GINGER.

2 NCP>SET MODULE X25-ACCESS KNOWN NETWORKS ALL

This command loads all permanent database entries stored for the X25-ACCESS database into the volatile database at the local node.

SET/DEFINE MODULE X25-PROTOCOL

Use the SET MODULE X25-PROTOCOL command to create or modify the parameters of the protocol module component in the volatile database. Use the DEFINE MODULE X25-PROTOCOL command to create or modify the parameters of the protocol module component in the permanent database.

Use separate SET MODULE X25-PROTOCOL commands to specify a DTE with its associated parameters, a group with its associated parameters, and the network profile. The X25-PROTOCOL module contains records that identify the packet switching data networks (PSDNs) your DTE is connected to, associate your local DTE (and possibly a group name) with VAX PSI, and control the transmission of packets.

Note that the word MODULE is optional.

FORMAT

SET MODULE X25-PROTOCOL *qualifier [...] parameter [...]*
DEFINE MODULE X25-PROTOCOL *qualifier [...] parameter [...]*

qualifiers

DTE dte-address

KNOWN DTES

Identifies a local DTE or specifies all known DTEs. See the *VAX PSI Public Network Information Cards* for the format of the address. If you specify the DTE qualifier, you must associate with it either of the following parameters:

NETWORK <i>network-name</i>	Selects the DTE(s) specified on a particular network.
-----------------------------	---

KNOWN NETWORKS	Selects the DTE(s) on all known networks.
----------------	---

If you have only one network set up, that network is the default. If you have more than one network set up, the NETWORK parameter is mandatory. In either case, you must follow the DTE qualifier with one or more of the following parameters:

ALL	Copies DTE parameters from the permanent database into the volatile database. Used only with the SET MODULE X25-PROTOCOL command.
-----	---

SET/DEFINE MODULE X25-PROTOCOL

CALL TIMER seconds

Specifies a timer that starts when a request to set up an X.25 virtual circuit is transmitted, and whose termination clears the request if no response has been received. Specify a value in the range 1 to 255. By default, the timer takes the network value specified by the PROFILE parameter. See the *VAX PSI Public Network Information Cards* for the network value of this parameter.

CHANNELS list

Specifies a list of logical channel numbers (LCN) reserved for outgoing calls. List is one or more LCNs. Separate multiple channel numbers with hyphens to indicate ranges, and with commas to indicate individual numbers. Specify a value in the range 0 to 4095 for each number in the list. If the DTE is to make outgoing calls, this parameter is mandatory when you specify a DTE for the first time. The LCN range at the DTE is defined by PSDN authorities at subscription time.

CLEAR TIMER seconds

Specifies a timer that starts when a request to clear an X.25 virtual circuit is transmitted, and whose termination retransmits the clear request if no response has been received. Specify a value in the range 1 to 255. By default, the timer takes the network value specified by the PROFILE parameter. See the *VAX PSI Public Network Information Cards* for the network value of this parameter.

COUNTER TIMER seconds

Sets a timer whose expiration causes a DTE counter logging event. Specify a decimal integer in the range 1 to 65,535.

DEFAULT DATA bytes

Specifies the default packet size for X.25 virtual circuits. This value must be at least 5 bytes less than the MAXIMUM BLOCK value you specify in the SET LINE command and must be a power of 2. Specify a value in the range 16 to 4096 bytes. By default, packet size takes the network value specified by the PROFILE parameter. See the *VAX PSI Public Network Information Cards* for the network value of this parameter.

DEFAULT WINDOW count

Specifies the default window size for X.25 virtual circuits, that is, the maximum number of packets for which outstanding acknowledgments are allowed. Specify a value in the range 1 to 127. By default, window size takes the network value specified by the PROFILE parameter. See the *VAX PSI Public Network Information Cards* for the network value of this parameter.

NCP

SET/DEFINE MODULE X25-PROTOCOL

INTERFACE interface-code	Specifies the way in which the processor operates. This parameter can only be used with the ISO8208 profile. The parameter can take one of the following values: DTE The processor operates as a DTE. DCE The processor operates as a DCE. NEGOTIATED The processor can operate either as a DTE or DCE. The processor automatically selects the appropriate method of operation.
INTERRUPT TIMER seconds	This is the interrupt timer (ISO T26 timer). This parameter can only be used with the ISO8208 profile. Specify a value in the range of 1 to 255. If you do not specify a value, there is no time limit on interrupt acknowledgments.
LINE line-id	Identifies the line associated with the DTE. Specify a line name in the format dev-c[-u]. This parameter is mandatory when you specify a DTE for the first time.
MAXIMUM CIRCUITS count	Specifies the maximum number of circuits for the DTE. By default, the maximum is 255.
MAXIMUM Clears count	Specifies the maximum number of attempts to clear an X.25 virtual circuit. Specify a value in the range 1 to 255. By default, the count takes the network value specified by the PROFILE parameter. See the <i>VAX PSI Public Network Information Cards</i> for the network value of this parameter.
MAXIMUM DATA bytes	Specifies the maximum packet size for X.25 virtual circuits. This value must be at least 5 bytes less than the MAXIMUM BLOCK value you specify in the SET LINE command and must be a power of 2. Specify a value in the range 16 to 4096 bytes. By default, packet size takes the network value specified by the PROFILE parameter. See the <i>VAX PSI Public Network Information Cards</i> for the network value of this parameter.
MAXIMUM RESETS count	Specifies the maximum number of attempts to reset an X.25 virtual circuit. Specify a value in the range 1 to 255. By default, the count takes the network value specified by the PROFILE parameter. See the <i>VAX PSI Public Network Information Cards</i> for the network value of this parameter.

SET/DEFINE MODULE X25-PROTOCOL

MAXIMUM RESTARTS count	Specifies the maximum number of attempts to restart an X.25 virtual circuit. Specify a value in the range 1 to 255. By default, the count takes the network value specified by the PROFILE parameter. See the <i>VAX PSI Public Network Information Cards</i> for the network value of this parameter.						
MAXIMUM WINDOW count	Specifies the window size allowed for X.25 virtual circuits, that is, the maximum number of packets for which outstanding acknowledgments are allowed. Specify a value in the range 1 to 127. By default, the window size takes the network value specified by the PROFILE parameter. See the <i>VAX PSI Public Network Information Cards</i> for the network value of this parameter.						
RESET TIMER seconds	Specifies a timer that starts when a reset is transmitted, and whose termination retransmits the reset if no response has been received. Specify a value in the range 1 to 255. By default, the timer takes the network value specified by the PROFILE parameter. See the <i>VAX PSI Public Network Information Cards</i> for the network value of this parameter.						
RESTART TIMER seconds	Specifies a timer that starts when a restart is transmitted, and whose termination retransmits the restart if no response has been received. Specify a value in the range 1 to 255. By default, the timer takes the network value specified by the PROFILE parameter. See the <i>VAX PSI Public Network Information Cards</i> for the network value of this parameter.						
STATE dte-state	<p>Specifies the operational state of the DTE. This parameter takes one of the following values:</p> <table border="0"> <tr> <td>ON</td><td>The DTE is available for normal use.</td></tr> <tr> <td>OFF</td><td>The DTE is not in use. This is the default state.</td></tr> <tr> <td>SHUT</td><td>The DTE is to be closed down but only when all present activity has ceased. Used only with the SET MODULE X25-PROTOCOL command.</td></tr> </table>	ON	The DTE is available for normal use.	OFF	The DTE is not in use. This is the default state.	SHUT	The DTE is to be closed down but only when all present activity has ceased. Used only with the SET MODULE X25-PROTOCOL command.
ON	The DTE is available for normal use.						
OFF	The DTE is not in use. This is the default state.						
SHUT	The DTE is to be closed down but only when all present activity has ceased. Used only with the SET MODULE X25-PROTOCOL command.						

GROUP group-name
KNOWN GROUPS

Identifies a closed user group (CUG) or bilateral closed user group (BCUG) or specifies all known groups. Each group specified should have a unique group-name, from 2 to 16 characters long. If you specify the GROUP qualifier, you must follow it with one or more of the following parameters:

ALL

Copies the group parameters from the permanent database into the volatile database. Used only with the SET MODULE X25-PROTOCOL command.

NCP

SET/DEFINE MODULE X25-PROTOCOL

DTE dte-address	Identifies the local DTE associated with the group name. This parameter is mandatory when you are creating a group.
NETWORK network-name	Identifies a network to which the DTE is connected. This parameter is mandatory when you are creating a group.
NUMBER group-number	Specifies the CUG or BCUG number. You can omit leading zeros. This parameter is mandatory when you are associating a DTE with a group.
TYPE BILATERAL	Specifies the user group as a BCUG. This parameter is mandatory when you are associating a DTE with a BCUG. It is omitted if the user group is a CUG.

NETWORK network-name KNOWN NETWORKS

Identifies a network or specifies all known networks. If you specify the NETWORK qualifier, you must follow it with the following parameter:

PROFILE profile-name	Specifies a profile to be used on the network. The profile-name is a character string of up to 32 characters. This parameter is mandatory. Refer to the <i>VAX PSI Public Network Information Cards</i> for the correct profile-name.
----------------------	---

EXAMPLES

1 NCP>SET MODULE X25-PROTOCOL DTE 123789456 NETWORK TELENET -
 - CHANNELS 20-10,3,9 LINE DUP-0 MAXIMUM CIRCUITS 400 STATE ON

This command creates a record for your local DTE (DTE address 123789456) and associates a line DUP-0 and a set of logical channels with this DTE.

2 NCP>SET MODULE X25-PROTOCOL NETWORK NET1 PROFILE PSDNC

This command specifies that you are going to use PSDNC, and that you are going to connect to this PSDN through the network NET1.

3 NCP>SET MODULE X25-PROTOCOL GROUP ESECUG DTE 123789456 -
 - NETWORK NET1 NUMBER 12

This command specifies that your DTE is a member of closed user group ESECUG with group number 12.

SET/DEFINE MODULE X25-SERVER /X29-SERVER

Use the SET MODULE X25-SERVER and SET MODULE X29-SERVER commands to create or modify the parameters of the X.25 or X.29 call handler in the volatile database. Use the DEFINE MODULE X25-SERVER and DEFINE MODULE X29-SERVER commands to create or modify the parameters of the X.25 or X.29 call handler in the permanent database.

Use separate SET MODULE X25-SERVER or DEFINE MODULE X29-SERVER commands to specify the module parameters and the destinations. The server modules contain records that identify and specify parameters for a destination, specify the maximum number of circuits that each module (that is, all destinations for a particular module) may have, and specify the state of the module. Note that the word MODULE is optional.

FORMAT

SET MODULE X25-SERVER [qualifier]
parameter[...]

SET MODULE X29-SERVER [qualifier]
parameter[...]

DEFINE MODULE X25-SERVER [qualifier]
parameter[...]

DEFINE MODULE X29-SERVER [qualifier]
parameter[...]

qualifiers

DESTINATION dest-name
KNOWN DESTINATIONS

Identifies a destination or specifies all known destinations. If you specify the destination qualifier, you must follow it with one or more of the following parameters:

ACCOUNT account

Identifies the user account for use by incoming calls to the destination. Specify a string of from 1 to 39 characters. By default, no account is used.

CALL MASK hex-value

Specifies the mask applied to the incoming call data before it is tested. By default, no mask is used.

CALL VALUE hex-value

Specifies the string used to test the incoming call data. By default, no mask is used.

NCP

SET/DEFINE MODULE X25-SERVER/X29-SERVER

CALLED ADDRESS dte-address	For redirected calls, this parameter identifies the DTE that was originally called. The parameter value is used to select a destination for a redirected call. By default, no called DTE is used.
EXTENSION MASK hex-string	Provides a mask for the called address extension facility. Using logical AND, the mask is merged with the called address extension in the incoming call and the result is compared with the extension value. By default, no extension mask is used.
EXTENSION VALUE hex-string	Provides a value for the called address extension facility. The value is compared with the address extension in the incoming call (after merging as described for EXTENSION MASK). By default, no extension mask is used.
GROUP group-name	Identifies a closed user group (CUG) or bilateral closed user group (BCUG). The group-name is an id string. By default, no group name is used.
INCOMING ADDRESS	Identifies the address of the DTE receiving the call (as specified in the call packet).
NETWORK network-name	Specifies the network for which calls are accepted. By default, no network name is used.
NODE node-id	Identifies the host node which is to be the destination of the incoming X.25 call. This parameter is specified if the executor node is a VAX/VMS node with VAX PSI software in multihost mode installed, serving as a connector node. This parameter is mandatory when you specify this destination for the first time. Used only with the SET MODULE X25-SERVER command or the DEFINE MODULE X25-SERVER command.
OBJECT object-id	Identifies the object that is activated when an incoming call arrives. The object-id is an id string. If the object name looks like a number, enclose the string in quotes. This parameter is mandatory when you specify a destination for the first time.
PASSWORD password	Specifies the password for use by incoming calls to the destination. Specify a string of from 1 to 39 characters. The default is that no password is used.

NCP

SET/DEFINE MODULE X25-SERVER/X29-SERVER

PRIORITY priority	Specifies the priority of the destination record and is used to select one of a set of destinations for which the incoming call may be valid. Specify a value in the range 0 to 255, where 255 is the highest priority. By default, priority takes a value of 0.
RECEIVING DTE dte-address	Identifies the local DTE. It is used to select a destination for calls received on the local DTE. By default, no receiving DTE is used.
REDIRECT REASON reason-code	Identifies a reason for redirecting an incoming call. The reason code can take one of the following values: BUSY The original DTE was busy and could not accept any more calls. OUT OF ORDER The original DTE was out of order. SYSTEMATIC All calls to the original DTE are automatically rerouted.
SENDING ADDRESS dte-address	The reason code is used to select a destination for a redirected call. By default, no reason is used.
SUBADDRESSES range	Identifies the address of the remote DTE that originated the call. By default, no sending DTE is used.
USER user-id	Specifies the range of local DTE subaddresses that identify the destination for the incoming call. Range consists of one or two subaddresses. Subaddress is a decimal integer in the range 0 to 9999. See the <i>VAX PSI Public Network Information Cards</i> for the maximum length of the subaddress on your network. Separate two subaddresses with a single hyphen to indicate a range. The second subaddress must be greater than the first. By default, no subaddress range is used.
	Specifies the user identification for use by incoming calls to the destination. Specify a string of from 1 to 16 characters. The default is that no user identification is used.

command parameters

ALL

Copies the call handler parameters from the permanent database into the volatile database. Used only for the SET MODULE X25-SERVER command or the SET MODULE X29-SERVER command.

COUNTER TIMER seconds

Sets a timer whose expiration causes a server module counter logging event. Specify a decimal integer in the range 1 to 65,535.

NCP

SET/DEFINE MODULE X25-SERVER/X29-SERVER

MAXIMUM CIRCUITS count

Specifies the maximum number of circuits that the module (that is, all destinations) may have. By default, the maximum is 255.

STATE module-state

Specifies the operational state of the server module. This parameter takes one of the following values:

- | | |
|------|--|
| ON | The module is available for normal use. For the X.25 server module, ON is the default state. |
| OFF | The module is not in use. For the X.29 server module, OFF is the default state. |
| SHUT | The module is to be closed down but only when all present activity has ceased. The SHUT value applies only to the SET MODULE X25-SERVER or X29-SERVER command. |

EXAMPLES

1 NCP>SET MODULE X25-SERVER DESTINATION JOE SUBADDRESSES 12-24 -
- SENDING ADDRESS 987321654 PRIORITY 3 OBJECT OBJONE

This command creates a destination called JOE that will handle incoming X.25 calls from a DTE with an address of 987321654 and a subaddress in the range 12 to 24.

2 NCP>SET MODULE X25-SERVER DESTINATION DEFDES -
- OBJECT LAST PRIORITY 0

This command modifies the destination called DEFDES that will handle all incoming calls. The destination has the lowest priority and will only handle calls that fail to find another destination.

3 NCP>SET MODULE X25-SERVER DESTINATION THRUSH SUBADDRESSES 11-20 -
- OBJECT 36 NODE THRUSH

This command creates a destination called THRUSH for node THRUSH that will match incoming X.25 calls with a subaddress in the range 11 to 20. This command is used if the executor node is a VAX/VMS node with VAX PSI software in multihost mode installed, serving as a connector node. Object 36 is the object number for VAX PSI Access on the remote node.

SET NODE ALL

The SET NODE ALL command updates the volatile database on the executor node with all the parameters stored for a particular node in the permanent database on the executor node.

FORMAT

SET *node-component ALL*

node components

KNOWN NODES

Indicates that all parameters for all known nodes are to be updated.

NODE *node-id*

Identifies the node whose parameters are to be updated.

EXAMPLE

NCP>SET KNOWN NODES ALL

This command loads all permanent database entries stored for all known nodes into the volatile database.

NCP

SET/DEFINE NODE

SET/DEFINE NODE

The SET NODE command creates or modifies node parameters in the volatile database on the local node. The DEFINE NODE command creates or modifies node parameters in the permanent database on the local node.

FORMAT

SET *node-component parameter [...]*
DEFINE *node-component parameter [...]*

node components

KNOWN NODES

Indicates that the specified parameters for all known nodes are to be created or modified in the database.

NODE *node-id*

Identifies the node (local or remote) for which specified parameters are to be created or modified in the database.

command parameters

ACCESS *option*

Specifies the allowed logical link connections for the node. There are four options:

INCOMING	Allows logical link connections from the remote node.
OUTGOING	Allows the local node to initiate connections to the remote node; but does not allow connections from the remote node.
BOTH	Allows incoming and outgoing logical link connections. This is the default.
NONE	Does not allow incoming or outgoing logical link connections to this node.

If you have OPER privilege, you can override the access restriction specified in this parameter.

ADDRESS *node-address*

Specifies the address of the node to which you want the database entry to refer.

COUNTER TIMER *seconds*

Specifies a timer whose expiration causes a node counter logging event.

CPU *cpu-type*

Identifies the node's CPU type. There are four possibilities:

DECSYSTEM1020
PDP11
PDP8
VAX

DIAGNOSTIC FILE file-spec

Applies to nodes on Ethernet circuits. Identifies the file to be read when the adjacent node has been downline loaded and has requested diagnostics. The file-spec is interpreted according to the file system of the executor node.

DUMP ADDRESS number

Identifies the address in memory to begin an upline dump of the adjacent node.

DUMP COUNT number

Specifies the default number of memory units to upline dump from the adjacent node.

DUMP FILE file-spec

Identifies which file to write to when the adjacent node is dumped upline. The file-spec is interpreted according to the file system of the executor node.

HARDWARE ADDRESS E-address

Identifies the Ethernet address originally assigned to the DEQNA or DEUNA controller for the system on the adjacent node. Used during operations such as downline loading to communicate with the system before the system has set up its physical address.

HOST node-id

Identifies the host node. For an adjacent node, the host address is a parameter that the adjacent node receives when it is loaded downline. If no host is specified, the default is the executor node.

INBOUND node-type

Required for nodes when the VERIFICATION INBOUND parameter is specified for the circuit over which the connection is to be made. Specifies the type of the node. The node-type is checked by the executor node if the specified node attempts to form a dynamic connection with the executor node. If VERIFICATION INBOUND is not specified for the circuit, the INBOUND parameter for the node is ignored. The two possible node types are

ENDNODE Allows the remote node to be connected only if it is configured as an end node.

ROUTER Allows the remote node to be connected whether it is configured as an end node or a router.

LOAD FILE file-spec

Specifies a file containing the system software for downline loading to an adjacent node.

NAME node-name

Specifies the node name to be associated with the node identification. Only one name can be assigned to a node address or line identification.

NCP

SET/DEFINE NODE

NONPRIVILEGED item

Specifies nonprivileged inbound access control information for the node, where

ACCOUNT account	Identifies the account for the default nonprivileged DECnet account on the designated node
PASSWORD password	Identifies the password for the default nonprivileged DECnet account on the designated node
USER user-id	Identifies the user name for the default nonprivileged DECnet account on the designated node

PRIVILEGED item

Specifies privileged inbound access control information for the node, where

ACCOUNT account	Identifies the account for the default privileged DECnet account on the designated node
PASSWORD password	Identifies the password for the default privileged DECnet account on the designated node
USER user-id	Identifies the user name for the default privileged DECnet account on the designated node

RECEIVE PASSWORD hex-password

Defines the password (1 to 8 characters) that is expected from the remote node during a Routing initialization sequence.

SECONDARY LOADER file-spec

Specifies a file containing the secondary boot loader for downline loading to an adjacent node.

SERVICE CIRCUIT circuit-id

Establishes the circuit to be used for downline loading. This circuit is the default value for the VIA parameter of the LOAD command. The node identification must be that of the target node.

SERVICE DEVICE device-type

Identifies the target node's line controller for the service line over which the operation is to take place. The possibilities are listed below.

DA	DL	DLV	DMC	DMF
DMP	DMR	DMV	DP	DPV
DQ	DTE	DU	DUP	DV
DZ	KDP	KDZ	KL	PCL
QNA	UNA			

Only the synchronous port on the DMF device may be used.

SERVICE NODE VERSION version

Specifies the DECnet-VAX software version of the node which downline loads its software to a target node. The two possibilities are PHASE III and PHASE IV. The default is PHASE IV.

SERVICE PASSWORD hex-password

Defines the password required to trigger the bootstrap mechanism on the target node. The password is a hexadecimal number. For DDCMP circuits, the password is in the range 0 to FFFFFFFF; for Ethernet circuits, it is in the range 0 to FFFFFFFFFFFFFF. The default is 0.

SOFTWARE IDENTIFICATION software-id

Is the ID of the software to be downline loaded.

SOFTWARE TYPE software-type

Identifies a particular file type to be loaded. There are three possibilities:

SECONDARY LOADER
TERTIARY LOADER
SYSTEM

The default is SECONDARY LOADER.

TERTIARY LOADER file-spec

Specifies a file containing a tertiary boot loader for downline loading to an adjacent node.

TRANSMIT PASSWORD password

Specifies a password (1 to 8 characters) sent to the remote node during a Routing initialization sequence.

DESCRIPTION

You can use this command to create or modify parameters for a remote node. You can also use this command, specifying the local node address, to create or modify certain executor parameters.

Refer to the VAX/VMS Networking Manual for a table of the parameters used with the SET NODE command according to their functions.

EXAMPLES

1 NCP>SET NODE 5.14 NAME DENVER

This command sets the node name of node 5.14 to DENVER.

2 NCP>SET NODE 2.11 -
- NONPRIVILEGED -
- USER NETNONPRIV -
- PASSWORD NONPRIV -
- PRIVILEGED -
- USER NETPRIV -
- PASSWORD PRIV

This command establishes default privileged and nonprivileged access control information for node 2.11.

3 NCP>SET NODE 14 ADDRESS 2

This command associates the information for node 1.14 with a new node whose address is 1.2. This example assumes that the executor is in area 1.

NCP

SET/DEFINE NODE

4 NCP>SET NODE LARK HARDWARE ADDRESS AA-00-03-00-00-C0

This command associates with the node LARK the Ethernet hardware address originally assigned to the DEUNA controller at node LARK. This information in the volatile database can be used during downline loading of target node LARK over an Ethernet circuit.

SET/DEFINE NODE CIRCUIT

Use the SET NODE command with the CIRCUIT parameter to create or modify loop node parameters in the volatile database on the local node. Use the DEFINE NODE command with the CIRCUIT parameter to create or modify loop node parameters in the permanent database on the local node.

The CIRCUIT parameter is the only valid parameter for loop nodes. You can assign only one loop node name to a particular circuit.

FORMAT

SET *node-component parameter*
DEFINE *node-component parameter*

**node
component**

NODE* *node-id

Identifies the loop node name or address for which the CIRCUIT parameter is to be created or modified in the database.

**command
parameter**

CIRCUIT* *circuit-id

Identifies which circuit to use for all traffic to the node.

EXAMPLE

NCP>SET NODE TESTER CIRCUIT DMP-0.4

This command sets the loop node name (TESTER) and identifies the circuit over which loop information is to be transmitted.

NCP

SET OBJECT ALL

SET OBJECT ALL

The SET OBJECT ALL command updates the volatile database on the local node with all the object parameters stored for a particular object in the permanent database on the local node.

FORMAT

SET *object-component ALL*

**object
components**

KNOWN OBJECTS

Indicates that all parameters for all known objects are to be updated.

OBJECT *object-name*

Identifies the object whose parameters are to be updated.

EXAMPLE

NCP>SET KNOWN OBJECTS ALL

This command loads all permanent database parameter entries stored for all known objects into the volatile database.

SET/DEFINE OBJECT

The SET OBJECT command creates or modifies object parameters in the volatile database on the local node. The DEFINE OBJECT command creates or modifies object parameters in the permanent database on the local node.

For VAX PSI operations, the SET OBJECT command specifies the parameters in the volatile database for a process that is activated by module X25-SERVER or X29-SERVER when an incoming X.25 or X.29 call arrives. For VAX PSI, the DEFINE OBJECT command specifies these parameters in the permanent database or the local DTE.

FORMAT

SET *object-component parameter [...]*
DEFINE *object-component parameter [...]*

object components

KNOWN OBJECTS

Applies only to VAX PSI. Indicates that the specified parameters are applicable to all known objects.

OBJECT *object-name*

Identifies the object for which specified parameters are to be created or modified in the database. For VAX PSI, specify the object name using an id-string.

command parameters

ACCOUNT *account*

Identifies the default user's account for access control on inbound connects to the object when no access control is specified by the remote node. For VAX PSI, identifies the user account for use by incoming X.25 calls to the object; if not specified, no account is used.

ALIAS INCOMING *option*

Specifies how a particular object responds to incoming connect requests directed to the alias node address. The alias node address is established using the SET EXECUTOR command. There are two options for ALIAS INCOMING:

- | | |
|---------|--|
| ENABLED | Allows a specified object to receive incoming connect requests that have been directed to the alias node address. An object such as PHONE which uses a protocol that depends on multiple links should not be enabled for ALIAS INCOMING. By default, if an alias node identifier has been specified, ALIAS INCOMING is enabled for all objects except for PHONE. |
|---------|--|

NCP

SET/DEFINE OBJECT

DISABLED	Does not allow a specified object to receive incoming connect requests that have been directed to the alias node address. An object whose resources are not accessible clusterwide should have ALIAS INCOMING disabled. If an attempt is made to connect to an object that does not have ALIAS INCOMING enabled, the status message NO SUCH OBJECT is returned.
----------	---

ALIAS OUTGOING option

Specifies whether a particular object uses the alias node identifier specified in the SET EXECUTOR command in its outgoing connect requests and other protocols. Specify either of the following two options:

ENABLED	Allows a specified object to use the alias node address in its outgoing connect requests. An object such as PHONE which uses a protocol that depends on multiple links should not have the ALIAS OUTGOING parameter enabled. By default, only the object MAIL has ALIAS OUTGOING enabled.
DISABLED	Does not allow a specified object to use the alias node address in its outgoing connect requests.

PROXY option

Assigns the proxy login access defaults to individual objects. Specify one of the following four options:

INCOMING	Allows proxy login to the object.
OUTGOING	Allows the object to initiate proxy login.
BOTH	Allow both incoming and outgoing proxy login access. This is the default option.
NONE	Does not allow incoming or outgoing proxy login access.

FILE file-spec

Specifies the command file containing the command procedure used to start the indicated object. If not specified, the default is SYS\$SYSTEM:object-name.COM. For VAX PSI, this parameter specifies the command file containing the command procedure used to activate a user program or task. When you specify an object for the first time, this parameter is mandatory.

NUMBER number

Specifies the object number. Use a number in the range of 0 to 255, except for those reserved. See Table NCP-1 for a list of reserved object numbers. When you specify an object for the first time, this parameter is mandatory. For VAX PSI, specify this parameter as 0.

PASSWORD password

Identifies the default user's password for access control on inbound connects to the object when no access control is specified by the remote node. This password must match the password established for the account. For VAX PSI, this parameter is mandatory. It identifies the user's password for use by incoming X.25 calls to the object.

PRIVILEGES privilege-list

Specifies those privileges normally required by the object. A user with those privileges may be supplied with default outbound privileged access control information when connecting to the object. Refer to the VAX/VMS

System Manager's Reference Manual for a complete list of privileges and their meanings. Does not apply to VAX PSI.

USER user-id

Identifies the default user's identification for access control on inbound connects to the object when no access control is specified by the remote node. For VAX PSI, this parameter specifies the user identification for use by incoming X.25 calls to the object; this parameter is mandatory when you specify an object for the first time.

DESCRIPTION

A DECnet object is identified by object name and object type. (The type is specified in the NUMBER parameter.) For VAX PSI operations, an object is identified by object-name.

The privilege list in the SET/DEFINE OBJECT command is used to validate the user privileges for outbound connections to that object. The access control information is used as the default access control for inbound connections.

Refer to the *VAX/VMS Networking Manual* for a table of object parameters and their functions. Table NCP-1 lists the object type codes used with the SET OBJECT and DEFINE OBJECT commands. All values in Table NCP-1 are expressed in decimal.

Table NCP-1 Object Type Codes

Code	Object Type Mnemonic	Description
0	TASK	User program
1–16		Reserved for DIGITAL use
17	FAL	File Access Listener for remote file and record access
18	HLD	Host loader for RSX-11S downline task loading requests
19	NML	Network Management Listener object
20		RSTS/E media transfer program (NETCPY)
21–22		Reserved for DIGITAL use
23	REMACP	Network terminal handler (host side)
24		Network terminal handler (terminal side)
25	MIRROR	Loopback mirror
26	EVL	Event receiver
27	MAIL	VAX/VMS Mail Utility
28		Reserved for DIGITAL use
29	PHONE	VAX/VMS Phone Utility and RSX-11M/M-PLUS Phone Utility
30–41		Reserved for DIGITAL use
42	CTERM	Network terminal handler

NCP

SET/DEFINE OBJECT

Table NCP-1 (Cont.) Object Type Codes

Code	Object Type Mnemonic	Description
43-62		Reserved for DIGITAL use
63	DTR	DECnet Test Receiver object
64-127		Reserved for DIGITAL use
128-255		Reserved for customer use

EXAMPLES

1 NCP>SET OBJECT NML NUMBER 19

This command sets an object number, 19, for the NML object.

2 NCP>SET OBJECT NML -
- PRIVILEGES OPER DIAGNOSE -
- USER NET_NONPRIV -
- PASSWORD NET_NONPRIV

This command establishes default access control information for the NML object and sets those privileges required to connect to this object.

3 NCP>SET OBJECT OBJONE FILE STARTUP.COM NUMBER 0 -
- USER NET PASSWORD NET

This command creates an object called OBJONE with a command procedure called STARTUP.COM. The incoming connection uses a password and user identification of NET.

4 NCP>SET EXECUTOR ALIAS NODE 2.13

.

NCP>SET OBJECT FOX ALIAS OUTGOING ENABLED

The SET EXECUTOR ALIAS NODE command establishes address 2.13 as the alias node identifier for the local node. The SET OBJECT command associates the object FOX with the alias node identifier for all outgoing connect requests.

SHOW AREA

The SHOW AREA command displays area information from the volatile database available to the local node.

FORMAT

SHOW area-component parameter [qualifier]

area components

ACTIVE AREAS

Indicates that information for all active areas is to be displayed.

AREA area-id

Identifies a particular area for which information is to be displayed.

KNOWN AREAS

Indicates that information for all known areas is to be displayed.

command parameters

CHARACTERISTICS

Indicates that static area information is to be displayed.

STATUS

Indicates that dynamic area information is to be displayed.

SUMMARY

Indicates that only the most useful area information is to be displayed. This is the default display type.

qualifier

TO file-spec

Specifies the output file. If none is specified, SYS\$OUTPUT is the default.

interpreting the display

CIRCUIT circuit-id

This read-only parameter identifies the circuit used to get to a remote area. Circuit-id is an id-string.

COST cost

This read-only parameter represents the total cost over the current path to the destination area. Cost is a positive integer value associated with using a circuit. The Routing layer routes messages (data) along the path between two areas with the least cost.

HOPS hops

This read-only parameter represents the number of hops over to a destination area. A hop is the Routing value representing the logical distance between two areas in a network.

NCP

SHOW AREA

NEXT NODE node-id

This read-only value indicates the next node on the circuit used to get to the destination area.

STATE state

This read-only value indicates the state of the area. The two possible states are REACHABLE and UNREACHABLE.

EXAMPLES

1 NCP>SHOW KNOWN AREAS STATUS

Known Area Volatile Status as of 15-April-1986 09:50:34

Area	State	Cost	Hops	Circuit	Next node to area
2	reachable	0	0		2.11 (BOSTON)
3	reachable	4	1	DMC-0	3.5 (TRNTO)
5	reachable	7	2	DMC-0	3.5 (TRNTO)
11	reachable	4	1	DMC-3	11.9 (DALLAS)
44	reachable	11	1	X25-INC	44.2 (LONDON)

This example displays status information for all known areas in the network.

2 NCP>SHOW KNOWN AREA CHARACTERISTICS

Known Area Volatile Characteristics as of 15-APR-1986 11:16:27

Area = 2

State = reachable
Next node to area = 2.11 (BOSTON)

Area = 3

State = reachable
Circuit = DMC-0
Next node to area = 3.5 (TRNTO)

Area = 5

State = reachable
Circuit = DMC-0
Next node to area = 3.5 (TRNTO)

Area = 11

State = reachable
Circuit = DMC-3
Next node to area = 11.9 (DALLAS)

Area = 44

State = reachable
Circuit = X25-INC
Next node to area = 44.2 (LONDON)

This example displays characteristics for all known areas in the network.

3 NCP>SHOW AREA 11 SUMMARY

Known Area Volatile Summary as of 15-APR-1986 11:16:44

Area	State	Circuit	Next node to area
11	reachable	DMC-3	11.9 (DALLAS)

This example displays only the most useful information for area 11 in the network.

SHOW/LIST CIRCUIT

The SHOW CIRCUIT command displays circuit information from the volatile database available to the local node or DTE. The LIST CIRCUIT command displays circuit information from the permanent database available to the local node or DTE.

FORMAT

SHOW *circuit-component parameter [qualifier] [...]*
LIST *circuit-component parameter [qualifier] [...]*

circuit components

ACTIVE CIRCUITS

Indicates that information for all active circuits is to be displayed.

KNOWN CIRCUITS

Indicates that information for all known circuits is to be displayed.

CIRCUIT *circuit-id*

Identifies a particular circuit for which information is to be displayed.

command parameters

CHARACTERISTICS

Indicates that static circuit information is to be displayed.

COUNTERS

Indicates that circuit error and performance statistics are to be displayed.

STATUS

Indicates that dynamic circuit information is to be displayed.

SUMMARY

Indicates that only the most useful circuit information is to be displayed. This is the default display type.

qualifiers

ADJACENT NODE *node-id*

Indicates that the display of a list of circuits is to be restricted to those circuits leading to the specified adjacent node.

TO *file-spec*

Specifies the output file. If none is specified, SYS\$OUTPUT is the default.

NCP

SHOW/LIST CIRCUIT

interpreting the display

Adjacent node node-id

This read-only parameter indicates an adjacent node on the circuit. There can be many adjacent nodes on an Ethernet circuit.

Block size number

This read-only parameter is the block size in bytes for the adjacent node, as negotiated with the adjacent Routing layer during Routing initialization over the circuit.

Designated router node-id

This read-only value is the Routing layer identification of the node that is to be used for routing to nonrouting nodes (end nodes) on this circuit.

Listen timer seconds

This read-only parameter determines the maximum time allowed to elapse before a message (a Routing Hello message or a user message) is received from an adjacent node on the circuit. The value is in the range 1 to 65,535.

Loopback name

This read-only parameter is the node name associated with a circuit for loopback testing. It identifies the circuit to be used for all traffic to the loop node.

Polling substate

Applies only to DDCMP CONTROL circuits. This read-only value represents the state of the tributary as determined by the polling algorithm when the multipoint polling state is AUTOMATIC. The polling substate is displayed as a tag on the polling state (for example, AUTOMATIC-INACTIVE). Possible values of the polling substate are

- Active
- Inactive
- Dying
- Dead

Substate

This read-only value is the operational substate of the circuit. The substate is displayed as a tag on the STATE parameter (for example, ON-SYNCHRONIZING). See Table NCP-3 in the Supplemental NCP Information Section for a complete list of circuit/line substates. Possible substate values are

- Synchronizing
- Starting
- Reflecting
- Looping
- Loading
- Dumping
- Triggering
- Autoservice
- Autoloading
- Autodumping
- Autotriggering
- Failed

EXAMPLES

1 NCP>SHOW KNOWN CIRCUITS STATUS

Known Circuit Volatile Status as of 15-April-1986 15:39:04

Circuit	State	Loopback Name	Adjacent Node	Block Size
DMC-0	on		3.5 (TRNTO)	576
DMC-1	on	-starting		
UNA-0	on		2.22 (LARK) 2.23 (DOVE) 2.20 (ROBIN) 2.21 (THRUSH)	576 576 576 576
X25-INC	on		INC	
X25-INC2	on	-synchronizing	44.2 (LONDON)	576
X25-RY1	off		RY1	
X25-RY2	off		RY2	
X25-ZK	off		ZK	

This command displays status information for all known circuits connected to the local node. This information includes the current state of the circuit; a loop node name (if any) associated with the circuit; and the address, name, and block size of the adjacent node on that circuit. For Ethernet circuits, all nodes attached to the circuit are displayed.

2 NCP>SHOW ACTIVE CIRCUITS CHARACTERISTICS

Active Circuit Volatile Characteristics as of 15-April-1986 15:39:21

Circuit = DMC-0

```
State          = on
Service        = enabled
Cost           = 12
Hello timer    = 15
Listen timer   = 30
Maximum buffers = 255
Verification   = disabled
Adjacent node  = 3.5 (TRNTO)
Listen timer   = 30
```

Circuit = UNA-0

```
State          = on
Designated router = 2.20 (ROBIN)
Cost           = 1
Maximum routers allowed = 33
Router priority = 64
Hello timer    = 15
Verification   = disabled
Adjacent node  = 2.22 (LARK)
Listen timer   = 45
```

Circuit = UNA-0

```
Adjacent node  = 2.23 (DOVE)
Listen timer   = 45
```

Circuit = UNA-0

```
Adjacent node  = 2.20 (ROBIN)
Listen timer   = 45
```

Circuit = UNA-0

```
Adjacent node  = 2.21 (THRUSH)
Listen timer   = 45
```

Circuit = X25-INC

```
State          = on
Loopback name = INC
Cost           = 20
Hello timer    = 15
Listen timer   = 30
Owner          = Executor
Usage          = incoming
Type           = X.25
```

NCP

SHOW/LIST CIRCUIT

```
Verification      = disabled
Adjacent node    = 44.2 (LONDON)
Listen timer     = 30
```

This command displays circuit characteristics for all circuits whose states are ON.

3 NCP>SHOW CIRCUIT UNA-0 STATUS

Circuit Volatile Status as of 15-April-1986 15:45:04

Circuit	State	Loopback Name	Adjacent Node	Block Size
UNA-0	on	2.22 (LARK)	576	
UNA-0		2.23 (DOVE)	576	
UNA-0		2.20 (ROBIN)	576	
UNA-0		2.21 (THRUSH)	576	

This command displays status information for circuit UNA-0.

4 NCP>TELL DOVE SHOW CIRCUIT UNA-0 CHARACTERISTICS

Circuit Volatile Characteristics as of 15-April-1986 15:46:20

Circuit = UNA-0

```
State          = on
Designated router = 2.20 (ROBIN)
Cost           = 1
Maximum routers allowed = 33
Router priority = 64
Hello timer    = 15
Verification   = disabled
Adjacent node  = 2.20 (ROBIN)
Listen timer   = 45
```

Circuit = UNA-0

```
Adjacent node  = 2.11 (BOSTON)
Listen timer   = 45
```

Circuit = UNA-0

```
Adjacent node  = 2.22 (LARK)
Listen timer   = 45
```

Circuit = UNA-0

```
Adjacent node  = 2.21 (THRUSH)
Listen timer   = 45
```

This command displays circuit characteristics for circuit UNA-0 on node DOVE.

5 NCP>TELL MYNODE SHOW CIRCUIT TX-0-5 CHARACTERISTICS

Circuit Volatile Characteristics as of 25-MAR-1986 15:35:12

Circuit = TX-0-5

```
State          = on
Substate       = -synchronizing
Service        = enabled
Cost           = 10
Hello timer    = 15
Verification   = inbound
```

This command displays circuit characteristics for circuit TX-0-5 on node MYNODE.

NCP

SHOW/LIST CIRCUIT

6 NCP>SHOW KNOWN CIRCUIT ADJACENT NODE BOSTON

Known Circuit Volatile Summary as of 15-April-1986 15:50:19

Circuit	State	Loopback Name	Adjacent Node
DMC-0	on		2.11 (BOSTON)
UNA-0	on		2.11 (BOSTON)

This command displays summary information for all circuits connected to adjacent node BOSTON.

7 NCP>SHOW ACTIVE CIRCUIT COUNTERS

Active Circuit Counters as of 15-April-1986 16:10:31

Circuit = DMC-0

>65534	Seconds since last zeroed
734	Terminating packets received
101	Originating packets sent
0	Terminating congestion loss
0	Transit packets received
0	Transit packets sent
0	Transit congestion loss
17	Circuit down
0	Initialization failure
3165010	Bytes received
3066061	Bytes sent
45098	Data blocks received
43538	Data blocks sent
105	Data errors outbound, including:
	NAKs received, header block check error
0	Data errors inbound
0	Local buffer errors
228	Remote buffer errors, including:
	NAKs received, buffer unavailable
0	Local reply timeouts
0	Remote reply timeouts

Circuit = UNA-0

>65534	Seconds since last zeroed
184949	Terminating packets received
214036	Originating packets sent
0	Terminating congestion loss
555679	Transit packets received
555334	Transit packets sent
2	Transit congestion loss
1	Circuit down
0	Initialization failure
1142708	Data blocks sent
104475601	Bytes sent
2389413	Data blocks received
277120757	Bytes received
0	Unrecognized frame destination
9	User buffer unavailable

Circuit = X25-INC

>65534	Seconds since last zeroed
650	Terminating packets received
959	Originating packets sent
0	Terminating congestion loss
11540	Transit packets received
19461	Transit packets sent
243	Transit congestion loss
18	Circuit down
0	Initialization failure

This command displays counter information for all active circuits. Refer to the Supplemental NCP Information Section for a description of each circuit counter.

SHOW/LIST EXECUTOR

The SHOW EXECUTOR command displays local node information from the volatile database. The LIST EXECUTOR command displays local node information from the permanent database.

FORMAT

SHOW EXECUTOR *parameter [qualifier]*
LIST EXECUTOR *parameter [qualifier]*

command parameters

CHARACTERISTICS

Indicates that static local node information is to be displayed.

COUNTERS

Indicates that local node error and performance statistics are to be displayed.

STATUS

Indicates that dynamic local node information is to be displayed.

SUMMARY

Indicates that only the most useful local node information is to be displayed. This is the default display type.

qualifier

TO file-id

Specifies the output file. If none is specified, SYS\$OUTPUT is the default.

interpreting the display

Active links number

This read-only parameter represents the number of active logical links from the executor to the destination node.

Delay seconds

This read-only parameter is the average round-trip delay in seconds from the executor to the destination node.

Management version n.n.n

This read-only parameter identifies the version number of the Network Management layer. The format of the number consists of the version number, the Engineering Change Order (ECO) number, and the user ECO number (for example, V3.0.0).

NSP version n.n.n

This read-only parameter identifies the version number of the End Communication layer. The format for the number is the same as for the management version number.

Physical address E-address

This read-only parameter is the Ethernet address that identifies the executor node.

Routing version n.n.n

This read-only parameter identifies the version number of the Routing layer. The format for the number is the same as for the management version number.

EXAMPLES

1 NCP>SHOW EXECUTOR CHARACTERISTICS
Node Volatile Characteristics as of 15-January-1986 15:37:32
Executor node = 2.11 (BOSTON)
Identification = VMS HOST SYSTEM
Management version = V4.0.0
Incoming timer = 45
Outgoing timer = 45
NSP version = V3.2.0
Maximum links = 32
Delay factor = 80
Delay weight = 5
Inactivity timer = 60
Retransmit factor = 10
Routing version = V2.0.0
Type = routing IV
Routing timer = 600
Broadcast routing timer = 40
Maximum address = 255
Maximum circuits = 16
Maximum cost = 1022
Maximum hops = 15
Maximum visits = 63
Maximum area = 63
Max broadcast nonrouters = 64
Max broadcast routers = 32
Area maximum cost = 1022
Area maximum hops = 30
Maximum buffers = 100
Buffer size = 576
Default access = incoming and outgoing
Pipeline quota = 1500
Default proxy access = incoming and outgoing
Alias incoming = Enabled
Alias maximum links = 32
Alias node = 2.10 (CLUSTR)

This command displays local node characteristics. This format displays values that you have set for the local node. In addition, it provides supplemental information on the software versions of NML, NSP, and Routing.

NCP

SHOW/LIST EXECUTOR

2 NCP>SHOW EXECUTOR STATUS
Node Volatile Status as of 15-April-1986 15:37:53
Executor node = 2.11 (BOSTON)
State = on
Physical address = AA-00-04-00-AB-04
Active links = 2
Delay = 1

This command displays status information for the local node. This format includes the operational state of the local node and dynamic routing information for the network as perceived from the executor node. The physical address is the Ethernet address of the executor node.

3 NCP>SHOW EXECUTOR SUMMARY
Node Volatile Summary as of 15-April-1986 15:38:04
Executor node = 2.11 (BOSTON)
State = on
Identification = VMS HOST SYSTEM
Active links = 4

This command displays summary information for the executor node. The summary format is similar to the status format.

4 NCP>SHOW EXECUTOR COUNTERS
Node Counters as of 15-April-1986 15:38:17
Executor node = 2.11 (BOSTON)
>65534 Seconds since last zeroed
1073585 Bytes received
1069826 Bytes sent
96120 Messages received
96120 Messages sent
1287 Connects received
1287 Connects sent
11 Response timeouts
0 Received connect resource errors
15 Maximum logical links active
34 Aged packet loss
70 Node unreachable packet loss
0 Node out-of-range packet loss
0 Oversized packet loss
0 Packet format error
0 Partial routing update loss
0 Verification reject

This command displays counter information for the executor node. Refer to the Supplemental NCP Information Section for a description of each node counter.

SHOW/LIST LINE

The SHOW LINE command displays line information from the volatile database available to the local node or DTE. The LIST LINE command displays line information from the permanent database available to the local node or DTE.

FORMAT

SHOW *line-component parameter [qualifier]*
LIST *line-component parameter [qualifier]*

line components

ACTIVE LINES

Indicates that information for all active lines is to be displayed.

KNOWN LINES

Indicates that information for all known lines is to be displayed.

LINE *line-id*

Identifies a particular line for which information is to be displayed.

command parameters

CHARACTERISTICS

Indicates that static line information is to be displayed.

COUNTERS

Indicates that line error and performance statistics are to be displayed.

STATUS

Indicates that dynamic line information is to be displayed.

SUMMARY

Indicates that only the most useful line information is to be displayed. This is the default display type.

qualifier

TO *file-id*

Specifies the output file. If none is specified, SYS\$OUTPUT is the default.

interpreting the display

Hardware address *E-address*

This read-only parameter is the Ethernet address associated with the line device hardware.

Substate

This read-only value is the operational substate of the line. The substate is displayed as a tag on the STATE parameter (for example,

NCP

SHOW/LIST LINE

ON-SYNCHRONIZING). See the Supplemental NCP Information Section for a complete list of circuit/line substates. Possible substate values are

- Synchronizing
- Starting
- Reflecting
- Looping
- Loading
- Dumping
- Triggering
- Autoservice
- Autoloading
- Autodumping
- Autotriggering
- Failed

EXAMPLES

1 NCP>SHOW ACTIVE LINES CHARACTERISTICS

```
Active Line Volatile Characteristics as of 21-JAN-1986 17:54:19
Line = DPV-0
Receive buffers      = 3
Controller          = normal
Duplex              = full
Protocol            = LAPB
Retransmit timer    = 2000
Maximum block       = 1036
Maximum retransmits = 20
Maximum window      = 7
X.25 line interface mode = DTE
Network             = FRED

Line = QNA-0
Receive buffers      = 6
Controller          = normal
Protocol            = Ethernet
Service timer        = 4000
Hardware address     = AA-00-03-01-25-AB
UNA device buffer size = 1498
```

This command displays line characteristics for all active lines; that is, those lines whose state is ON. This format displays values for line parameters that you have set for individual lines.

2 NCP>SHOW KNOWN LINES STATUS

```
Known Line Volatile Status as of 15-April-1986 10:21:27
Line           State
DMC-0          on
DMC-1          on
DUP-0          on
UNA-0          on
```

This command displays status information for all known lines connected to the local node. This format displays the current state of the line.

3 NCP>SHOW LINE UNA-0 SUMMARY

```
Line Volatile Summary as of 15-April-1986 10:22:11
Line           State
UNA-0          on
```

This command displays summary information for line UNA-0.

4 NCP>TELL LARK SHOW LINE UNA-0 CHARACTERISTICS
Line Volatile Characteristics as of 15-April-1986 10:23:41
Line = UNA-0
Receive buffers = 9
Controller = normal
Protocol = Ethernet
Hardware address = AA-00-03-00-00-C0
Buffer size = 1498

This command displays line characteristics for line UNA-0 on node LARK.

5 NCP>SHOW LINE UNA-0 COUNTERS
Line Counters as of 15-April-1986 10:25:43
Line = UNA-0
>65534 Seconds since last zeroed
3098176 Data blocks received
1928504 Multicast blocks received
 0 Receive failure
302792074 Bytes received
200175224 Multicast bytes received
 0 Data overrun
 0 Local buffer errors
1652342 Data blocks sent
452703 Multicast blocks sent
 226 Blocks sent, multiple collision
 351 Blocks sent, single collision
 12189 Blocks sent, initially deferred
139320099 Bytes sent
46438927 Multicast bytes sent
 0 Send failure
 0 Collision detect check failure
17270 Unrecognized frame destination
 0 System buffer unavailable
 5401 User buffer unavailable

This command shows the line counters for Ethernet circuit UNA-0. Refer to the Supplemental NCP Information Section for a complete description of each line counter.

SHOW LINKS

The SHOW LINKS command displays link information from the volatile database available to the local node.

FORMAT

SHOW *link-component parameter [qualifier]*

link components

KNOWN LINKS

Indicates that information for all known links is to be displayed.

KNOWN LINKS WITH NODE *node-id*

Indicates that information for all known links to the designated node is to be displayed.

LINK *link-no*

Displays information about the specific link.

command parameters

CHARACTERISTICS

Displays static link information.

STATUS

Displays dynamic link information.

SUMMARY

Displays only the most useful link information. This is the default display type.

qualifier

TO *file-spec*

Specifies the output file. If none is specified, SYS\$OUTPUT is the default.

interpreting the display

State

This read-only value is the operational state of the link. See the Supplemental NCP Information Section for a complete list of link states. Possible state values are

- Closed
- CI sending
- CI ACKed
- CI receiving
- CC sending
- Run
- DI received
- DI sending

EXAMPLES

1 NCP>SHOW KNOWN LINKS

Known Link Volatile Summary as of 15-APR-1986 15:53:42

Link	Node	PID	Process	Remote link	Remote user
4104	11.9 (DALLAS)	20600090	GRAY	3116	MAIL
8229	3.5 (TRNTO)	2060014C	DAVIS	7217	NML
3125	2.17 (NYC)	2060023D	REMACP	5175	THOMPSON_1

This command displays link information for all links known to the local node. This format is the same for all three display types. The format displays the local link number, node name and address for which the links apply, the process identification number (PID), the process associated with the link, the remote link, and the remote user's PID or process name.

2 NCP>SHOW KNOWN LINKS WITH NODE DALLAS

Known Link Volatile Summary as of 15-APR-1986 15:53:42

Link	Node	PID	Process	Remote link	Remote user
4104	11.9 (DALLAS)	20600090	GRAY	3116	MAIL

This command displays link information for all active links with remote node DALLAS.

3 NCP>SHOW KNOWN LINKS CHARACTERISTICS

Known Link Volatile Characteristics as of 2-FEB-1986 15:00:42

Link = 8245

State	= run
PID	= 264006AB
Remote node	= 2.58 (THRUSH)
Delay time	= 1
Remote link	= 9270
Remote user	= CTERM
Username	= MARTIN
Process name	= MARTIN

Link = 9270

State	= CI received
PID	= 26400091
Remote node	= 2.58 (THRUSH)
Delay time	= 1
Remote link	= 8245
Remote user	= BARNETT
Username	= SYSTEM
Process name	= REMACP

This command displays link characteristics for all links known to the local node. Refer to the Supplemental NCP Information Section for a complete description of each link state.

SHOW/LIST LOGGING

The SHOW LOGGING command displays logging information (from the volatile database) available to the local node or DTE. The LIST LOGGING command displays logging information (from the permanent database) available to the local node or DTE.

FORMAT

SHOW *logging-component parameter [qualifier] [...]*
LIST *logging-component parameter [qualifier] [...]*

logging components**ACTIVE LOGGING**

Indicates that information for all active logging is to be displayed.

KNOWN LOGGING

Indicates that information for all known logging is to be displayed.

LOGGING CONSOLE

Indicates that information for the logging console is to be displayed.

LOGGING FILE

Indicates that information for the logging file is to be displayed.

LOGGING MONITOR

Indicates that information for the logging monitor is to be displayed.

command parameters**CHARACTERISTICS**

Indicates that static logging information is to be displayed.

EVENTS

Indicates that event logging information is to be displayed.

STATUS

Indicates that dynamic logging information is to be displayed.

SUMMARY

Indicates that only the most useful logging information is to be displayed. This is the default display type.

qualifiers**KNOWN SINKS**

Indicates that information for all known sinks is to be displayed. Does not apply to VAX PSI.

SINK NODE node-id

Identifies a particular sink node for which information is to be displayed. If you do not include this parameter, NCP displays only local node logging. Does not apply to VAX PSI.

TO file-spec

Specifies the output file. If none is specified, SYS\$OUTPUT is the default.

EXAMPLES

1 NCP>SHOW LOGGING CONSOLE CHARACTERISTICS SINK NODE TRNTO
Logging Volatile Characteristics as of 15-April-1986 13:36:54
Logging sink type = console
Sink Node = 3.5 (TRNTO)
Events = 4.0-5,8-10
Events = 5.0-5

This command displays logging console characteristics for logging to that component on remote node TRNTO. This format displays the sink node for which the events apply and those events that are set for the logging console component at the local node.

2 NCP>SHOW LOGGING FILE EVENTS KNOWN SINKS
Logging Volatile Events as of 15-April-1986 13:40:54
Logging sink type = file
Sink node = 3.5 (TRNTO)
Events = 4.0-5
Logging sink type = file
Sink node = 11.9 (DALLAS)
Events = 0.0-7
Events = 2.0-1
Events = 5.0-4

This command displays events being logged to the logging file component as specified for all known sinks. This display lists the sink node, the source for events, and the actual events that are logged to the logging file at that node.

3 NCP>SHOW ACTIVE LOGGING STATUS KNOWN SINKS
Active Logging Status as of 15-April-1986 14:02:15
Logging sink type = console
Sink Node Source Events State Name
3.5 (TRNTO) DMC-0 4.0-5,8-10 on
 5.0-4
Logging sink type = file
Sink Node Source Events State Name
3.5 (TRNTO) DMC-0 4.0-5,8-10 on NET.LOG
 5.0-4
11.9 (DALLAS) DMC-3 5.0-4
11.9 (DALLAS) 0.0-7
 2.0-1

This command displays status information for all active logging at all known sinks. This display identifies each logging component and information particular to that component. The status format is similar to the events format, except that the name of the component and its operational state are included in this display. Note that the executor node in this example is node TRNTO.

NCP

SHOW/LIST LOGGING

4 NCP>SHOW KNOWN LOGGING SUMMARY SINK NODE TRNTO
Known Logging Volatile Summary as of 15-April-1986 15:30:20
Logging sink type = console

Sink Node	Source	Events	State	Name
5 (TRNTO)	DMC-0	4.0-5,8-10 5.0-4	on	

This command displays summary information for all known logging to node TRNTO. The summary format is the same as the events format.

SHOW/LIST MODULE CONFIGURATOR

The SHOW MODULE CONFIGURATOR command displays information about the Ethernet configurator module from the volatile database at the local node. The LIST MODULE CONFIGURATOR command displays information about the configurator module from the permanent database at the local node. Note that the word MODULE is optional.

FORMAT

SHOW MODULE CONFIGURATOR *circuit-qualifier parameter [qualifier]*

LIST MODULE CONFIGURATOR *circuit-qualifier parameter [qualifier]*

circuit qualifiers**KNOWN CIRCUITS**

Applies only to Ethernet circuits. Indicates that configurator information should be displayed for all known Ethernet circuits.

CIRCUIT *circuit-id*

Applies only to Ethernet circuits. Indicates that configurator information should be displayed only for the Ethernet circuit identified by circuit-id.

command parameters**CHARACTERISTICS**

Indicates that dynamic information on all active systems on the specified Ethernet circuit or circuits is to be displayed. (Specifying CHARACTERISTICS or STATUS results in a similar display.)

STATUS

Indicates that dynamic information on all active systems on the specified Ethernet circuit or circuits is to be displayed. (Specifying CHARACTERISTICS or STATUS results in a similar display.)

SUMMARY

Indicates that the only information to be displayed is the list of circuits being monitored and the length of time surveillance has been maintained. This is the default display type.

qualifier**TO** *file-spec*

Specifies the output file. If none is specified, SYS\$OUTPUT is the default.

NCP

SHOW/LIST MODULE CONFIGURATOR

Interpreting the display

Circuit name

This read-only parameter identifies the circuit for which surveillance is being maintained.

Device type device-type

This read-only value identifies the type of device over which the remote system is communicating on the circuit. Device-type represents one of the standard line devices (for example, UNA).

Elapsed time hours:minutes:seconds

This read-only value indicates the amount of time that surveillance has been enabled on the circuit. Hours is a decimal integer in the range 0 to 65,535; minutes and seconds are decimal integers in the range 0 to 59 (for example, 19:48:24).

Function list

This read-only parameter lists the maintenance functions that the remote system supports. The list consists of one or more of the items below.

Item	Meaning
Boot	Remote controlled boot
Counters	Data link counter can be read
Dump	Upline dump
Load	Multiblock downline load
Loop	Loopback
Primary	Primary loader

Hardware address E-address

This read-only value is the Ethernet hardware address originally assigned to the DEUNA controller hardware at the remote system.

Maintenance version n.n.n

This read-only value indicates the maintenance protocol version of the remote system, consisting of the version number, the Engineering Change order (ECO) number, and the user ECO number (for example, V3.0.0).

Physical address E-address

This read-only value represents the Ethernet physical address of a remote system on the Ethernet. If the system has not set its own physical address, the value will be the same as the Ethernet hardware address originally assigned to the system.

Surveillance flag

This read-only value indicates whether surveillance is enabled or disabled for the system indicated.

Surveillance control

This read-only value indicates whether a list of active systems is to be kept for the indicated circuit. A control value of disabled means that the list is not

being kept (this is the default value). A control value of enabled means that the list is being kept.

Time of last report day-month hour:minute:second

This read-only value is the date and time the remote system last reported in on a circuit under surveillance. Day is a decimal integer in the range 1 to 31, month is the name of the month, hour is a decimal integer in the range 0 to 23, and minute and second are decimal integers in the range 0 to 59 (for example, 16-JUL 14:30:03).

EXAMPLES

1 NCP>SHOW CONFIGURATOR KNOWN CIRCUITS SUMMARY TO PRINTFILE

```
Module Configurator Volatile Summary as of 15-April-1986 08:55:21
  Circuit      Surveillance    Elapsed Time
  UNA-0        enabled          00:12:31
```

This command causes summary information on surveillance on all known Ethernet circuits to be directed to the file PRINTFILE.

2 NCP>SHOW MODULE CONFIGURATOR KNOWN CIRCUITS STATUS

```
Module Configurator Volatile Status as of 15-April-1986 09:15:25
```

Circuit name	= UNA-0
Surveillance flag	= enabled
Elapsed time	= 00:32:43
Physical address	= AA-00-04-00-A3-4
Time of last report	= 22-Mar 09:14:08
Maintenance version	= V3.0.0
Function list	= Loop, Primary loader
Hardware address	= AA-00-03-00-00-07
Device type	= UNA
 Circuit name	= UNA-0
Surveillance flag	= enabled
Elapsed time	= 00:32:43
Physical address	= AA-00-03-00-0A-04
Time of last report	= 22-Mar 09:11:29
Maintenance version	= V3.0.0
Function list	= Loop, Primary loader
Hardware address	= AA-00-03-00-00-0A
Device type	= UNA
 Circuit name	= UNA-0
Surveillance flag	= enabled
Elapsed time	= 00:32:43
Physical address	= AA-00-04-00-D8-04
Time of last report	= 22-Mar 09:11:44
Maintenance version	= V3.0.0
Function list	= Loop, Primary loader
Hardware address	= AA-00-03-00-00-1C
Device type	= UNA

This command displays the above information on active systems on all Ethernet circuits known to the executor node.

NCP

SHOW/LIST MODULE X25-ACCESS

SHOW/LIST MODULE X25-ACCESS

Use the SHOW MODULE X25-ACCESS command to display network names and parameters of the X.25 Access module from the volatile database. Use the LIST MODULE X25-ACCESS command to display networks and parameters of the X.25 Access module from the permanent database. Note that the word MODULE is optional.

FORMAT

SHOW MODULE X25-ACCESS parameter [qualifier]
LIST MODULE X25-ACCESS parameter [qualifier]

network qualifiers

KNOWN NETWORKS **NETWORK network-name**

Displays information about a specific X.25 network or all of the X.25 networks accessed through the multihost connector node.

command parameters

CHARACTERISTICS

Indicates that static X25-ACCESS information is to be displayed.

STATUS

Indicates that dynamic X25-ACCESS information is to be displayed.

SUMMARY

Indicates that only the most useful X25-ACCESS information is to be displayed. This is the default display type.

qualifier

TO file-spec

Specifies the output file. If none is specified, SYS\$OUTPUT is the default.

EXAMPLES

1 NCP>SHOW MODULE X25-ACCESS KNOWN NETWORKS STATUS TO MYFILE.NET

This command writes status information for all known X.25 networks to the file named MYFILE.NET.

2 NCP>SHOW MODULE X25-ACCESS NETWORK PSS1 SUMMARY

Module X25-Access Volatile Summary as of 3-FEB-1986 12:00:56
Network = PSS1
Node = 13.4 (EGRET)

This command displays static network information for the X.25 network named PSS1.

SHOW/LIST MODULE X25-PROTOCOL

The SHOW MODULE X25-PROTOCOL command displays the parameters of the protocol module from the volatile database. The LIST MODULE X25-PROTOCOL command displays the protocol module parameters stored in the permanent database. Note that the word MODULE and the component-qualifier are optional.

FORMAT

SHOW MODULE X25-PROTOCOL

*[component-qualifier]
parameter [qualifier]*

LIST MODULE X25-PROTOCOL

*[component-qualifier]
parameter [qualifier]*

component qualifiers

DTE *dte-address*

KNOWN DTES

Displays information for the specified DTE only or all known DTEs.

If you specify the DTE qualifier, you must associate with it either of the following parameters:

NETWORK *network-name*

Selects the DTE(s) specified on a particular network.

KNOWN NETWORKS

Selects the DTE(s) on all known networks.

GROUP *name*

KNOWN GROUPS

Displays information for the specified group only or all known groups.

NETWORK *network-name*

KNOWN NETWORKS

Displays information for the specified network only, or for all known networks.

command parameters

CHARACTERISTICS

Displays static module information.

COUNTERS

Displays DTE error and performance statistics. Does not apply to the LIST MODULE X25-PROTOCOL command.

STATUS

Displays dynamic module information. Does not apply to the LIST MODULE X25-PROTOCOL command.

NCP

SHOW/LIST MODULE X25-PROTOCOL

SUMMARY

Displays only the most useful module information. This is the default display type.

qualifier

TO file-spec

Specifies the output file. If you omit this parameter, the default file is SYS\$OUTPUT.

interpreting the display

Active channels count

This read-only parameter is the count of known switched virtual circuit (SVC) logical channel numbers currently in use. The channels, defined in the CHANNEL parameter of the SET MODULE X25-PROTOCOL command, can be used for either outgoing or incoming SVCs.

Active switched count

This read-only parameter is the count of SVCs currently in use.

Maximum channels number

This read-only parameter indicates the number of logical channels defined.

EXAMPLES

1 NCP>SHOW MODULE X25-PROTOCOL NETWORK FRED CHARACTERISTICS

```
Module X25-Protocol Volatile Characteristics as of 21-JAN-1986 17:55:24
Network          = FRED
Profile          = PSS
```

This command displays module characteristics for the X25-PROTOCOL module.

2 NCP>SHOW MODULE X25-PROTOCOL KNOWN DTES CHARACTERISTICS

```
Known Module X25-Protocol Volatile Characteristics as of 21-JAN-1986 18:07:49
```

DTE	= 12345
Network	= ALICE
Line	= KMV-0-0
Channels	= 1-31
Maximum channels	= 31
Maximum circuits	= 255
Default data	= 128
Default window	= 2
Maximum data	= 1024
Maximum window	= 7
Maximum clears	= 6
Maximum resets	= 6
Maximum restarts	= 6
Call timer	= 200
Clear timer	= 180
Reset timer	= 180
Restart timer	= 180
Interface mode	= DTE
DTE	= 54321
Network	= FRED
Line	= DPV-0-0
Channels	= 1-64
Maximum channels	= 64
Maximum circuits	= 255

SHOW/LIST MODULE X25-PROTOCOL

```

Default data          = 128
Default window        = 2
Maximum data          = 1024
Maximum window        = 7
Maximum clears         = 6
Maximum resets         = 6
Maximum restarts       = 6
Call timer             = 200
Clear timer            = 180
Reset timer             = 180
Restart timer           = 180
Interface mode          = DTE

```

This command displays characteristics for all DTEs known to the X25-PROTOCOL module.

3 NCP>SHOW MODULE X25-PROTOCOL DTE 123456789 STATUS

Module X25-Protocol Volatile Status as of 5-FEB-1986 11:50:12

DTE	Network	State	Active Channels	Active Switched
123456789	PSS_COMBINATION	on -running	0	0

This command displays the status of DTE 123456789.

4 NCP>SHOW MODULE X25-PROTOCOL DTE 123456789 COUNTERS

Module X25-Protocol Counters as of 21-JAN-1986 18:08:26

DTE	= 54321
Network	= FRED
7144	Seconds since last zeroed
11705	Bytes received
11705	Bytes sent
501	Data blocks received
501	Data blocks sent
2	Calls received
2	Calls sent
0	Fast selects received
0	Fast selects sent
2	Maximum switched circuits active
1	Maximum channels active
0	Received call resource errors
0	Locally initiated resets
0	Remotely initiated resets
0	Network initiated resets
0	Restarts

This command displays information for each DTE counter. Refer to the Supplemental NCP Information Section for a description of each DTE counter.

5 NCP>SHOW MODULE X25-PROTOCOL KNOWN GROUPS CHARACTERISTICS

Known Module X25-Protocol Volatile Characteristics as of 21-JAN-1986 18:13:50

Group	DTE	Network	Number	Type
SEALS	54321	FRED	54	bilateral
WALES	54321	FRED	6	

This command displays information for each closed user group.

NCP

SHOW/LIST MODULE X25-SERVER/X29-SERVER

SHOW/LIST MODULE X25-SERVER /X29-SERVER

The SHOW MODULE X25-SERVER and SHOW MODULE X29-SERVER commands display the parameters of the X.25 and X.29 call handlers stored in the volatile database. The LIST MODULE X25-SERVER and LIST MODULE X29-SERVER commands display the parameters of the X.25 and X.29 call handlers stored in the permanent database. Note that word MODULE is optional.

FORMAT	SHOW MODULE X25-SERVER [component-qualifier] parameter [qualifier]
	SHOW MODULE X29-SERVER [component-qualifier] parameter [qualifier]
	LIST MODULE X25-SERVER [component-qualifier] parameter [qualifier]
	LIST MODULE X29-SERVER [component-qualifier] parameter [qualifier]

component qualifiers	DESTINATION name KNOWN DESTINATIONS Displays information for the specified destination only, or for all known destinations.
-----------------------------	---

command parameters	CHARACTERISTICS Displays static module information.
	COUNTERS Displays module error and performance statistics. Does not apply to the LIST MODULE X25-SERVER or LIST MODULE X29-SERVER command.

	STATUS Displays dynamic module information. Does not apply to the LIST MODULE X25-SERVER or LIST MODULE X29-SERVER command.
--	---

	SUMMARY Displays only the most useful module information. This is the default display type.
--	---

qualifier	TO file-spec Specifies the output file. If you omit this parameter, the default file is SYS\$OUTPUT.
------------------	--

interpreting the display

Active circuits count

This read-only parameter indicates the number of circuits the module currently has open.

EXAMPLES

1 NCP>SHOW MODULE X25-SERVER CHARACTERISTICS

```
Module X25-Server Volatile Characteristics as of 3-FEB-1986 12:04:58
Maximum circuits      = 255
```

This command displays characteristics for the X25-SERVER module.

2 NCP>LIST MODULE X25-SERVER DESTINATION XTR CHARACTERISTICS

```
Module X25-Server Permanent Characteristics as of 3-FEB-1986 12:04:27
Destination          = XTR
Object               = PSIXTR
Priority             = 30
Sending DTE         = 234273412345
Subaddresses         = 33-35
```

This command displays server module characteristics from the permanent database for destination XTR.

3 NCP>SHOW MODULE X25-SERVER STATUS

```
Module X25-Server Volatile Status as of 3-FEB-1986 12:05:13
Active circuits       = 1
State                = on
```

This command displays status information for the X25-SERVER module.

4 NCP>SHOW MODULE X25-SERVER COUNTERS

```
Module X25-Server Counters as of 3-FEB-1986 12:05:21
4704 Seconds since last zeroed
    7 Maximum circuits active
    2 Incoming calls rejected, no resources
```

This command displays counter information for each server module. See the Supplemental NCP Information Section for a description of each server module counter.

NCP

SHOW/LIST NODE

SHOW/LIST NODE

The SHOW NODE command displays node information from the volatile database available to the local node. The LIST NODE command displays node information from the permanent database available to the local node.

FORMAT

SHOW *node-component parameter [qualifier]*
LIST *node-component parameter [qualifier]*

node components

ACTIVE NODES

For a routing node, indicates that information for all reachable nodes is to be displayed. For a nonrouting node (end node), indicates that information is to be displayed for the executor. Optionally, you can associate the following CIRCUIT parameter with this parameter:

CIRCUIT circuit-id Specifies that the display of a list of nodes is to be restricted to those nodes adjacent to the specified circuit.

ADJACENT NODES

Indicates that information for all adjacent nodes is to be displayed. Adjacent nodes are those the executor perceives Routing can reach that are separated from the executor by a single circuit. Each occurrence of a node on a different circuit appears as a separate adjacent node. Optionally, you can associate the following CIRCUIT parameter with this parameter:

CIRCUIT circuit-id Specifies that the display of a list of nodes is to be restricted to those nodes adjacent to the specified circuit.

KNOWN NODES

Indicates that information for all known nodes is to be displayed. Optionally, you can associate the following CIRCUIT parameter with this parameter:

CIRCUIT circuit-id Specifies that the display of a list of nodes is to be restricted to those nodes adjacent to the specified circuit.

LOOP NODES

Indicates that information for all loop nodes is to be displayed.

NODE *node-id*

Identifies a particular node for which information is to be displayed.

command parameters

CHARACTERISTICS

Indicates that static node information is to be displayed.

COUNTERS

Indicates that node error and performance statistics are to be displayed.

STATUS

Indicates that dynamic node information is to be displayed.

SUMMARY

Indicates that only the most useful node information is to be displayed. This is the default display type.

qualifier

TO file-spec

Specifies the output file. If none is specified, SYS\$OUTPUT is the default.

interpreting the display

Active links number

This read-only parameter represents the number of active logical links from the executor to the destination node.

Circuit circuit-id

This read-only parameter identifies the circuit used to get to a remote node.

Cost number

This read-only parameter represents the total cost over the current path to the destination node. The DECnet Routing layer routes messages (data) along the path between two nodes with the smallest cost. Cost is a positive integer value.

Delay seconds

This read-only parameter is the average round-trip delay in seconds from the executor to the destination node.

Hops number

This read-only parameter indicates the number of hops from the executor node to a destination node. A hop is a value assigned by the Routing layer that represents the logical distance between two nodes on a network.

Management version n.n.n

This read-only parameter identifies the version number of the Network Management layer. The format of the number consists of the version number, the Engineering Change Order (ECO) number, and the user ECO number (for example, V3.0.0).

Next node node-id

This read-only parameter indicates the address and name of the next node on the circuit used to get to the node whose status is being displayed. Knowing which node is the partner on the next hop of the path to the destination node aids in tracing the path to that destination over a large number of hops.

NSP version n.n.n

This read-only parameter identifies the version number of the End Communication layer. The format for the number is the same as for the management version number.

NCP

SHOW/LIST NODE

Physical address E-address

This read only parameter is the Ethernet address that identifies the executor node.

Routing version n.n.n

This read-only parameter identifies the version number of the Routing layer. The format for the number is the same as for the Management version number.

Type node-type

This read-only parameter indicates the type of the specified node. The values of node-type are

Phase II
Routing III
Nonrouting III
Routing IV
Nonrouting IV
Area

If the specified node is not adjacent to the local node, the node-type will be blank.

EXAMPLES

1 NCP>SHOW ACTIVE NODES CHARACTERISTICS

```
Active Node Volatile Characteristics as of 15-April-1986 13:38:34
Executor node      = 2.11 (BOSTON)
Identification     = HOST SYSTEM
Management version = V4.0.0
Incoming timer     = 45
Outgoing timer    = 45
NSP version        = V3.2.0
Maximum links      = 32
Delay factor       = 80
Delay weight       = 5
Inactivity timer   = 60
Retransmit factor  = 10
Routing version    = V2.0.0
Type               = routing IV
Routing timer      = 600
Subaddresses       = 1
Maximum address    = 255
Max broadcast nonrouters = 64
Max broadcast routers = 32
Maximum cost        = 1022
Maximum hops         = 15
Maximum visits       = 63
Maximum buffers      = 100
Buffer size          = 576
Nonprivileged user id = NETNONPRIV
Default access       = incoming and outgoing
Pipeline quota       = 1500
Default proxy access = incoming and outgoing

Remote node = 3.5 (TRNTO)
Nonprivileged user id = NETNONPRIV
Remote node = 11.9 (DALLAS)
Nonprivileged user id = NETNONPRIV
Remote node = 12.34 (MYNODE)
```

NCP

SHOW/LIST NODE

```
Inbound          = router
Remote node = 2.13 (KANSAS)
Nonprivileged user id = NETNONPRIV
Remote node = 2.17 (NYC)
Nonprivileged user id = NETNONPRIV
Loop node = 0 (TESTER)
```

This command displays characteristics for all active nodes. This format displays values that you have set for both the local node and remote nodes.

2 NCP>SHOW NODE TRNTO STATUS

```
Node Volatile Status as of 15-April-1986 13:39:05
      Node   State    Active Delay   Type      Cost Hops Line
      Links
3.5 (TRNTO) reachable   1       2   routing IV   1   1   DMC-0
```

This command displays status information for remote node TRNTO. This format includes the following information:

- Node name and address.
- Routing state (reachable or unreachable).
- Active links associated with the node.
- Delay time required to set the retransmission (estimated round trip delay).
- Node type (phase II, routing III, routing IV, nonrouting III, nonrouting IV, or area).
- Minimum total path cost to the node. This value represents the cost of the actual path a packet will use to get to this node.
- Minimum total hops to the node. Note that the minimum cost path may be different from the minimum hops path. This value does not necessarily prevent the actual path from being used.
- Line associated with the node, that is, the line over which traffic to the node is currently being routed.

Full status information is displayed only for reachable nodes.

3

```
NCP>SHOW KNOWN NODES SUMMARY
Known Node Volatile Summary as of 15-April-1986 13:39:47
Executor node = 2.11 (BOSTON)
      State          = on
      Identification = HOST SYSTEM
      Active links  = 2
      Node          State   Active Delay   Line
      Links
3.5 (TRNTO)   reachable
11.9 (DALLAS) reachable   1       2   DMC-0
2.13 (KANSAS) reachable   1       4   DMC-3
5.14 (DENVER)  unreachable
2.15 (BANGOR)  unreachable
2.17 (NYC)     reachable   1       2   DMC-2
0 (LOCAL)      
```

This command displays summary information for all known nodes. The summary format contains a subset of the information displayed in the status format. Note that the summary format also displays loop nodes and the line associated with the loop node name.

NCP

SHOW/LIST NODE

4 NCP>SHOW NODE TRNTO COUNTERS
Node Counters as of 15-April-1986 13:40:08
Remote node = 3.5 (TRNTO)
18748 Seconds since last zeroed
557304 Bytes received
231849 Bytes sent
27703 Messages received
27556 Messages sent
56 Connects received
5 Connects sent
12 Response timeouts
0 Received connect resource errors

This command displays counter information for remote node TRNTO. Note that remote node counters are a subset of those maintained for the local node. Refer to the Supplemental NCP Information Section for a description of each node counter.

5 NCP>SET NODE LOCAL LINE DMC-0
NCP>SHOW LOOP NODES STATUS
Loop Node Volatile Status as of 15-April-1986 13:43:19
Node State Active Delay Type Cost Hops Line
Links
0 (Local) DMC-0

This command displays status information for all loop nodes.

SHOW/LIST OBJECT

The SHOW OBJECT command displays object information from the volatile database available to the local node. The LIST OBJECT command displays object information from the permanent database available to the local node.

For VAX PSI, the SHOW OBJECT or LIST OBJECT command displays the parameters of a process that is activated by module X25-SERVER or X29-SERVER when an incoming X.25 call arrives.

FORMAT

SHOW *object-component parameter [qualifier]*
LIST *object-component parameter [qualifier]*

object components

KNOWN OBJECTS

Indicates that information for all known objects is to be displayed.

OBJECT *object-name*

Identifies a particular object for which information is to be displayed.

command parameters

CHARACTERISTICS

Indicates that static object information is to be displayed.

STATUS

Indicates that dynamic object information is to be displayed.

SUMMARY

Indicates that only the most useful object information is to be displayed. This is the default display type.

qualifier

TO *file-id*

Specifies the output file. If none is specified, SYS\$OUTPUT is the default.

DESCRIPTION

This command is a system-specific network management command; therefore, an error occurs if you execute this command at a node other than a DECnet-VAX node, because objects may have different characteristics on different nodes.

NCP

SHOW/LIST OBJECT

EXAMPLES

1 NCP>SHOW OBJECT MAIL CHARACTERISTICS

```
Object Volatile Characteristics as of 15-January-1985 13:46:22
Object = MAIL
Number      = 27
File id     = MAIL.EXE
User id     = NETNONPRIV
Proxy access = outgoing
Alias outgoing = Enabled
Alias incoming = Enabled
```

This command displays object characteristics for the MAIL object. This format displays values that you have set for the object.

2 NCP>SHOW OBJECT NML CHARACTERISTICS TO NMLCHARS.NET

This command copies NML object characteristics from the volatile database to a file named NMLCHARS.NET.

3 NCP>SHOW OBJECT PACKETSINK SUMMARY

```
Object Volatile Summary as of 3-FEB-1986 12:07:44
Object   Number  File/PID          User Id        Password
PACKETSINK    0  DISK$USER01:[X25TEST]PR  X25TEST    TESTER
```

This command displays object characteristics for the PACKETSINK object.

TELL

Use the TELL prefix to identify the executor node for a particular NCP command.

FORMAT

node component

TELL *node-component parameter [...]*

command parameters

node-spec

Specifies a node name or address optionally followed by access control information as specified for VAX/VMS. Use one of the following formats:

node-id
node-id"user password account"

The node-spec may be a logical name. It is possible to override access control in a logical name with explicit access control information in the command.

ACCOUNT *account*

Identifies the user's account for access control verification at the designated executor node.

PASSWORD *password*

Identifies the user's password for access control verification at the designated executor node.

USER *user-id*

Identifies the user's ID for access control verification at the designated executor node.

DESCRIPTION

The TELL command sets the executor for only one command and must prefix the command for which it is intended.

This command allows you optionally to specify access control information in one of two ways, either as part of the node-spec or as distinct parameters.

EXAMPLES

1 NCP>TELL 3.5 SET KNOWN LINES ALL

This command sets the executor to node 3.5 where the SET KNOWN LINES ALL command executes.

2 NCP>TELL TRNTO"GRAY MARY" SHOW KNOWN LINES

.

This command uses access control information to set the executor to node TRNTO where the SHOW KNOWN LINES command executes. The information is displayed locally.

NCP

TELL

3 NCP>TELL TRNTO USER SYSTEM PASSWORD MANAGER ZERO EXECUTOR

This command uses an alternate access control format to set the executor to node TRNTO where the ZERO EXECUTOR command executes.

TRIGGER NODE

The TRIGGER NODE command triggers the bootstrap mechanism of a target node to allow the node to load itself. Use this command to initiate the loading sequence for an unattended system.

FORMAT

TRIGGER *node-component parameter [...]*

**node
component**

NODE *node-id*

Identifies the node whose bootstrap is to be triggered.

**command
parameters**

PHYSICAL ADDRESS *E-address*

Applies only to nodes on Ethernet circuits. Specifies the Ethernet address that the target node currently uses to identify itself. The value is the Ethernet physical address the target node has set for itself, or, if the target node has not set an Ethernet address, the HARDWARE ADDRESS parameter if associated with the target node in the executor node's volatile database.

SERVICE PASSWORD *password*

Identifies the password required to trigger the bootstrap mechanism on the target node. The password is a hexadecimal number. For DDCMP circuits, it is in the range 0 to FFFFFFFF; for Ethernet circuits, it is in the range 0 to FFFFFFFFFFFFFF.

VIA *circuit-id*

Identifies the circuit over which the operation is to take place.

EXAMPLES

1 NCP>TRIGGER NODE NYC

This command triggers the bootstrap mechanism on node NYC to initiate a downline load operation.

2 NCP>TRIGGER NODE NYC SERVICE PASSWORD FEFEFEFEFEFEFE VIA DMC-2

This command provides a service password in order to trigger the bootstrap mechanism on node NYC and initiate a downline load operation over circuit DMC-2.

3 NCP>TRIGGER NODE SWIFT PHYSICAL ADDRESS AA-00-04-00-07-04 -
- VIA UNA-0

This command triggers the bootstrap mechanism on Ethernet node SWIFT to initiate a downline load operation. The executor node uses the Ethernet physical address specified in the command to address the node SWIFT on Ethernet circuit UNA-0.

NCP

TRIGGER NODE

4 NCP>TRIGGER NODE SWIFT VIA UNA-0

This command triggers the bootstrap mechanism on node SWIFT on Ethernet circuit UNA-0 to initiate a downline load operation. DECnet-VAX at the executor node attempts to address node SWIFT using an Ethernet physical address derived from the node number. If node SWIFT does not recognize this address, the executor node uses the Ethernet hardware address for node SWIFT if specified in the volatile database at the executor node.

TRIGGER VIA

The TRIGGER VIA command triggers the bootstrap mechanism of a target node using the specified circuit to allow the node to load itself. Use this command to initiate the loading sequence for an unattended system.

FORMAT

command parameters

TRIGGER VIA *circuit-id parameter [...]*

PHYSICAL ADDRESS E-address

Applies only to target nodes on Ethernet circuits. Specifies the Ethernet address that the target node currently uses to identify itself. The value is the Ethernet physical address the target node has set for itself or, if the target node has not set an Ethernet address, the HARDWARE ADDRESS parameter if it is associated with the target node in the executor node's volatile database. This parameter must be included if an Ethernet circuit is specified in VIA circuit-id.

SERVICE PASSWORD password

Identifies the password required to trigger the bootstrap mechanism on the target node. The password is a hexadecimal number. For DDCMP circuits, it is in the range 0 to FFFFFFFF; for Ethernet circuits, it is in the range 0 to FFFFFFFFFFFFFF. The word SERVICE is optional.

DESCRIPTION

This command triggers the target node through the specified circuit. The target node identification is obtained from the volatile database on the executor node.

EXAMPLES

1 NCP>TRIGGER VIA DMC-0

This command triggers the bootstrap mechanism on the node connected to circuit DMC-0.

2 NCP>TRIGGER VIA UNA-0 PHYSICAL ADDRESS AA-00-04-00-07-04

This command triggers the bootstrap mechanism at the target node whose Ethernet physical address on circuit UNA-0 is specified in the command.

NCP

ZERO CIRCUITS

ZERO CIRCUITS

The ZERO CIRCUITS command resets circuit counters on the local node.

FORMAT	ZERO <i>circuit-component COUNTERS</i>
circuit components	KNOWN CIRCUITS Indicates that counters for all known circuits are to be reset.
	CIRCUIT <i>circuit-id</i> Identifies a particular circuit for which counters are to be reset. For VAX PSI, specify the X.25 circuit name using an id-string.

EXAMPLE

NCP>ZERO KNOWN CIRCUITS COUNTERS

This command resets all circuit counters for all known circuits.

ZERO EXECUTOR

The ZERO EXECUTOR command resets all counters for the local node.

FORMAT

ZERO EXECUTOR COUNTERS

EXAMPLE

NCP>**ZERO EXECUTOR COUNTERS**

This command resets all counters for the local node.

ZERO LINE

The ZERO LINE command resets line counters on the local node.

FORMAT **ZERO** *line-component COUNTERS*

line components **KNOWN LINES**
Indicates that counters for all known lines are to be reset.

LINE *line-id*
Identifies a particular line for which counters are to be reset.

EXAMPLES

1 NCP>~~ZERO KNOWN LINES COUNTERS~~

This command resets all line counters for all known lines.

2 NCP>~~ZERO LINE DUP-0~~

This command resets line counters for the line DUP-0.

ZERO MODULE X25-PROTOCOL

Use the ZERO MODULE X25-PROTOCOL command to zero the counters for a particular DTE or all known DTEs. Note that the word MODULE is optional.

FORMAT

ZERO MODULE X25-PROTOCOL *parameter*
[*qualifier*]
COUNTERS

command parameters

DTE dte-address

Zeroes the counters for the specified DTE only.

KNOWN DTES

Zeroes the counters for all known DTEs.

Optionally, the DTE parameter can be associated with either of the following qualifiers:

NETWORK network-name

Selects the DTE(s) specified on a particular network.

KNOWN NETWORKS

Selects the DTE(s) on all known networks.

EXAMPLES

1 NCP>ZERO MODULE X25-PROTOCOL KNOWN DTES COUNTERS

This command zeroes all DTE counters for all known DTEs on the default network.

2 NCP>ZERO MODULE X25-PROTOCOL KNOWN DTES NETWORK TELENET COUNTERS

This command zeroes counters for all DTEs on the network TELENET.

NCP

ZERO MODULE X25-SERVER/X29-SERVER

ZERO MODULE X25-SERVER/X29-SERVER

The ZERO MODULE X25-SERVER and ZERO MODULE X29-SERVER commands zero the counters for the X.25 and X.29 call handlers. Note that the word MODULE is optional.

FORMAT

ZERO MODULE X25-SERVER COUNTERS
ZERO MODULE X29-SERVER COUNTERS

EXAMPLE

NCP>ZERO MODULE X25-SERVER COUNTERS

This command zeroes all module counters associated with the X.25 call handler.

ZERO NODE

The ZERO NODE command resets node counters on the local node.

FORMAT

ZERO *node-component COUNTERS*

node components

KNOWN NODES

Indicates that counters for all known nodes are to be reset.

NODE *node-id*

Identifies a particular node for which counters are to be reset.

EXAMPLE

NCP>**ZERO NODE TRNTO COUNTERS**

This command resets all node counters maintained on the local node for remote node TRNTO.



A

Supplemental NCP Information

This section contains tables and descriptive information which supplements the preceding NCP command summary. The four subsections include:

- A network counter summary
- A table of DECnet circuit and line devices
- Tables of circuit, line, link, DTE and server module states and substates
- A summary of DECnet event classes and types

A.1

Network Counter Summary

Following are descriptions of circuit, line, node, X.25 protocol module, and X.25 server module counters. Where possible, the description of each counter includes the probable causes for the particular type of occurrence. In some cases, the counters correspond to network events. The events and event descriptions provide additional information relative to the specific occurrence. The individual counter descriptions state which counters correspond to events. Refer to Section A.4 for complete descriptions of these events.

NCP reports the contents of all circuit, line, node, and module counters in decimal. Counter content displays with an angle bracket (>) indicate that the counter has overflowed. In some cases where the counter has a value, the standard counter is expanded to include a reason.

The following examples illustrate the display of circuit and line counters.

NCP

Supplemental NCP Information

```
NCP>SHOW KNOWN CIRCUITS COUNTERS
Known Circuit Counters as of 15-April-1986 20:08:19
Circuit = DMC-0
    >65534 Seconds since last zeroed
        11 Terminating packets received
        5 Originating packets sent
        0 Terminating congestion loss
    1769 Transit packets received
    1884 Transit packets sent
        0 Transit congestion loss
    26 Circuit down
        2 Initialization failure
    782495 Bytes received
    757263 Bytes sent
    16972 Data blocks received
    17740 Data blocks sent
        0 Data errors outbound
        54 Data errors inbound, including:
            NAKs sent, header block check error
            NAKs sent, data field block check error
        0 Local buffer errors
        0 Remote buffer errors
    18 Local reply timeouts
        0 Remote reply timeouts

Circuit = UNA-0
    >65534 Seconds since last zeroed
    241392 Terminating packets received
    248861 Originating packets sent
        0 Terminating congestion loss
    351707 Transit packets received
    351510 Transit packets sent
        12 Transit congestion loss
        3 Circuit down
        0 Initialization failure
    628570 Data blocks sent
    51239061 Bytes sent
    1199899 Data blocks received
    148469990 Bytes received
        0 Unrecognized frame destination
    1095 User buffer unavailable
```

```
NCP>SHOW KNOWN LINE COUNTERS
Known Line Counters as of 15-April-1986 20:06:31
Line = DUP-0
    >65534 Seconds since last zeroed
    1879643 Bytes received
    5349550 Bytes sent
    137572 Data blocks received
    117752 Data blocks sent
        19 Data errors inbound
        0 Data errors outbound
    >254 Remote reply timeouts
        0 Local reply timeouts
        0 Remote buffer errors
        0 Local buffer errors
        7 Remote process errors, including:
            FRMR sent, header format error
        4 Local process errors, including:
            FRMR received, header format error

Line = UNA-0
    >65534 Seconds since last zeroed
    1240675 Data blocks received
    608195 Multicast blocks received
        0 Receive failure
    146028085 Bytes received
    78201969 Multicast bytes received
        0 Data overrun
        33 Local buffer errors
    686344 Data blocks sent
    49646 Multicast blocks sent
        363 Blocks sent, multiple collision
        384 Blocks sent, single collision
        9520 Blocks sent, initially deferred
    53774695 Bytes sent
    7160674 Multicast bytes sent
        6 Send failure, including:
            Carrier check failed
        6 Collision detect check failure
    7014 Unrecognized frame destination
        5 System buffer unavailable
        1148 User buffer unavailable
```

A.1.1 Circuit Counters

This section contains a description of each circuit counter.

Seconds since last zeroed

This counter indicates the number of seconds that have elapsed since the circuit counters were zeroed. This counter provides a time frame for other counter values. The software increments this counter every second and clears it when other counters are cleared. Applies also to VAX PSI operations.

Terminating packets received

This counter indicates the number of data packets received by the Routing layer on the local node.

Originating packets sent

This counter indicates the number of data packets sent by the Routing layer on the local node.

NCP

Supplemental NCP Information

Terminating congestion loss

This counter indicates the number of packets intended for the node that were discarded because Routing could not buffer them.

Transit packets received

This counter indicates the number of data packets received over the circuit and to be routed through the local node to another node. It is maintained only on full-routing nodes.

Transit packets sent

This counter indicates the number of data packets sent over the circuit and being routed through the local node to another node. It is maintained only on full-routing nodes.

Transit congestion loss

This counter indicates the number of transit data packets discarded for congestion reasons. This counter is maintained only on full-routing nodes. If congestion loss increases, increase the MAXIMUM BUFFERS parameter for the local node.

Circuit down

This counter indicates the number of failures—operator or software induced—for the circuit. These failures may include any number of hardware-, software-, or operator-caused problems. This counter corresponds to events 4.7–9 (circuit down).

Initialization failure

This counter indicates the number of times the circuit failed to initialize with remote Routing software. These failures may include any number of hardware-, software-, or operator-caused problems. This counter corresponds to events 4.11–13 (initialization failure).

Bytes received

This counter indicates the number of bytes of data received by the local node over the circuit. You can use this information together with the data blocks received counter to determine the inbound traffic load. Applies also to VAX PSI operations.

Bytes sent

This counter indicates the number of bytes of data sent by the local node over the circuit. You can use this information together with the data blocks sent counter to determine the outbound traffic load. Applies also to VAX PSI operations.

Data blocks received

This counter indicates the number of data blocks received by the local node. You can use this information as a statistical base when evaluating the number of inbound data errors, remote reply timeouts, and local buffer errors. Applies also to VAX PSI operations.

Data blocks sent

This counter indicates the number of data blocks sent by the local node. You can use this information as a statistical base when evaluating the number of outbound data errors, local reply timeouts, and remote buffer errors. Applies also to VAX PSI operations.

Data errors outbound

This counter indicates the number of data errors that normally result from errors on the outbound communications channel from the local node. These errors are caused usually by a noisy communications line or a poorly functioning modem. This counter represents the sum of all NAKs received.

Data errors inbound

This counter indicates the number of data errors that normally result from errors on the inbound communications channel to the local node. These errors are caused usually by a noisy communications line or a poorly functioning modem. This counter may include either or both of the following qualifiers if they contribute to two errors:

- NAKs sent, header block check error
- NAKs sent, data field block check error

Local buffer errors

This counter indicates the number of local buffer errors that normally result from a local receive buffer that is too small. These errors are caused when a remote node sends a block that is too big for the local node's receive buffer. This counter may include the following qualifier if it contributes to the error

NAKs sent, buffer unavailable

This counter corresponds to event 5.9 (local buffer too small) and event 4.3 (oversized packet loss).

Remote buffer errors

This counter indicates the number of remote buffer errors that normally result from a remote receive buffer that is too small.

Local reply timeouts

This counter indicates the number of timeouts that normally result from

- The loss of communication between nodes while the local node has data to transmit
- An inappropriate value set for the reply timer on the local node

NCP

Supplemental NCP Information

Remote reply timeouts

This counter indicates the number of timeouts that normally result from

- The loss of communication between nodes while the remote node has data to transmit
- An inappropriate value set for the reply timer on the remote node

User buffer unavailable

This counter indicates the total number of times that no user buffer was available for an incoming frame that passed all filtering. User buffers are supplied by users on receive requests.

The following counters may be displayed for devices other than the DMC11 on remote nodes other than DECnet-VAX.

Selection intervals elapsed

This counter indicates the number of selection intervals for half-duplex and multipoint control stations. This is the number of times a station selects another station. You can use this information as a statistical base when evaluating selection timeout errors.

Selection timeouts

This counter indicates the number of selection timeouts that normally result from

- Loss of communication with a remote station
- Data errors on the communications channel to or from that station
- An inappropriate value for the station's select timer. This counter corresponds to event 5.5 (select error threshold) and may include either the *No reply to select* or the *Incomplete reply to select* qualifiers if they contribute to the errors.

Locally initiated resets

This counter indicates the number of resets sent over the circuit. Applies only to VAX PSI operations.

Remotely initiated resets

This counter indicates the number of resets received over the circuit. Applies only to VAX PSI operations.

Network initiated resets

This counter indicates the number of resets originated by the PSDN received over the circuit. Applies only to VAX PSI operations.

A.1.2 Line Counters

This section contains a description of each line counter.

Seconds since last zeroed

This counter indicates the number of seconds that elapsed since the line counters were zeroed. This counter provides a time frame for other counter values. The software increments this counter every second and clears it when other counters are cleared. DECnet-VAX presently maintains this counter only for DMP and DMF lines. Applies also to VAX PSI operations.

Remote process errors

This counter indicates the number of remote DDCMP processing failures. DECnet-VAX presently maintains this counter only for DMP and DMF lines. For a multipoint circuit, this counter reflects the total errors for the control station, and not for each tributary. These errors may be caused by a programming error or a hardware malfunction at the adjacent node. They could also be caused by a circuit error that was not detected by the Data Link protocol. This counter may include any of the following qualifiers if they contribute to these errors:

- NAKs received, receive overrun
- NAKs sent, header format error
- Selection address errors
- Streaming tributaries

This counter corresponds to events 5.4 and 5.6-8.

Local process errors

This counter indicates the number of local DDCMP processing errors. DECnet-VAX presently maintains this counter only for DMP and DMF lines. For a multipoint circuit, this counter reflects the total errors for the control station, and not for each tributary. These errors may be caused by a programming error at the local node, or by a circuit error that was not detected by the Data Link protocol. This counter may include any of the following qualifiers if they contribute to the errors:

- NAKs sent, receive overrun
- Receive overrun, NAK not sent
- Transmit overruns
- NAKs received, header format error

This counter corresponds to events 5.3-4 and 5.6.

Blocks sent, initially deferred

This counter indicates the total number of times that a frame transmission was deferred on its first transmission attempt. Used in measuring Ethernet contention with no collisions.

NCP

Supplemental NCP Information

Blocks sent, multiple collisions

This counter indicates the total number of times that a frame was successfully transmitted on the third or later attempt after normal collisions on previous attempts.

Blocks sent, single collision

This counter indicates the total number of times that a frame was successfully transmitted on the second attempt after a normal collision on the first attempt.

Bytes received

This counter indicates the number of bytes of data received over the line. Applies to Ethernet and VAX PSI operations.

Bytes sent

This counter indicates the number of bytes of data sent over the line. Applies to Ethernet and VAX PSI operations.

Collision detect check failure

This counter indicates the approximate number of times that a collision detect was not sensed after a transmission.

Data blocks received

This counter indicates the number of data blocks received over the line. Applies to Ethernet and VAX PSI operations.

Data blocks sent

This counter indicates the number of data blocks sent over the line. Applies to Ethernet and VAX PSI operations.

Data errors inbound

This counter indicates the number of incoming data errors that result from faults on the channel between the local DTE and DCE. The counter can include up to three of the following qualifiers:

- Block too long
- Block check error
- Reject sent

Applies only to VAX PSI operations.

Data errors outbound

This counter indicates the number of outgoing data errors that result from faults on the channel between the local DTE and DCE. The counter can include the following qualifier:

- Reject received

Applies only to VAX PSI operations.

NCP

Supplemental NCP Information

Data overrun

This counter indicates the total number of times the hardware lost an incoming frame because it was unable to keep up with the data rate.

Multicast blocks received

This counter indicates the total number of multicast blocks successfully received.

Multicast bytes received

This counter indicates the total number of multicast data bytes successfully received (includes bytes in Ethernet data field but not the Ethernet data link headers).

Send failures

This counter indicates the total number of times a transmit attempt failed. For each increment of the counter, a type of failure is recorded, as follows:

- Excessive collisions
- Carrier check failed
- Short circuit
- Open circuit
- Frame too long
- Remote failure to defer

Receive failures

This counter indicates the total number of blocks received with some data error (the blocks are data frames that passed either physical or multicast address comparison. For each increment of the counter, a type of failure is recorded, as follows:

- Block check error
- Framing error
- Frame too long

Local reply timeouts

This counter indicates the number of times that a frame with a poll bit set has been received over the line; that is, the number of errors that result from faults on the line. Applies only to VAX PSI operations.

Remote reply timeouts

This counter indicates the number of times that the retransmit timer for that line has expired. Either the line is not connected to a modem, the X.25 network is not responding fast enough, or the retransmit timer is set too low. Applies only to VAX PSI operations.

NCP

Supplemental NCP Information

Remote buffer errors

This counter indicates the number of receive-not-ready (RNR) frames received. The counter can include the following qualifier:

RNR received, buffer unavailable

Applies only to VAX PSI operations.

Local buffer errors

This counter indicates the number of receive-not-ready (RNR) frames sent. The counter can include the following qualifier:

RNR sent, buffer unavailable

Applies only to VAX PSI operations.

Remote process errors

This counter indicates an invalid n(R) and a frame reject (FRMR) sent over the line. The counter can include the following qualifiers:

Invalid n(R) received

FRMR sent, header format error

These errors usually indicate that the DCE is functioning incorrectly. Applies only to VAX PSI operations.

Local process errors

This counter indicates that a frame reject (FRMR) has been received over the line or that your system is being overloaded. The counter can include the following qualifiers:

Transmit underrun

Receive overrun

FRMR received, header format error

The first two qualifiers usually indicate that the system is overloaded and the third usually indicates that the VAX PSI software is functioning incorrectly. Applies only to VAX PSI operations.

Unrecognized frame destination

This counter indicates the number of times a frame was discarded because there was no portal with the protocol type or multicast address enabled. The count includes frames received for the physical address, broadcast address, or multicast address.

System buffer unavailable

This counter indicates the total number of times no system buffer was available for an incoming frame. This can be any buffer between the hardware and the user buffers (those supplied on receive requests).

User buffer unavailable

This counter indicates the total number of times no user buffer was available for an incoming frame that passed all filtering. The user buffer is one supplied by the user on a receive request.

A.1.3 Node Counters

This section contains a description of each node counter.

Seconds since last zeroed

This counter indicates the number of seconds that have elapsed since the node counters were zeroed. It provides a time frame for other counter values. The software increments this counter every second and clears it when other counters are cleared.

Bytes received

This counter indicates the number of user data bytes received from a remote node. This includes interrupt messages, but excludes Connect, Accept, Reject, and Disconnect messages.

Bytes sent

This counter indicates the number of user data bytes sent to a remote node.

Messages received

This counter indicates the number of NSP messages received from a remote node.

Messages sent

This counter indicates the number of NSP messages sent to a remote node.

Connects received

This counter indicates the number of logical link connection requests received by the local node.

Connects sent

This counter indicates the number of logical link connection requests sent by the local node.

Response timeouts

This counter indicates the number of times there was no response to an NSP segment within the allotted timeout period. This implies that the local node is having to retransmit messages. Such retransmission can be caused either by messages being discarded in the network or by a wide variance in the round-trip delay to the node. Normally, it indicates an overload condition in the network.

NCP

Supplemental NCP Information

Received connect resource errors

This counter indicates the number of inbound connect messages for which the local node did not have sufficient resources. These errors may result from dynamic memory problems or too few logical link slots; that is, the MAXIMUM LINKS parameter value is too small.

Maximum logical links active

This counter indicates the largest number of logical links that have been active since DECnet-VAX software was started or since executor counters were zeroed.

Aged packet loss

This counter indicates the number of data packets discarded for visiting too many nodes. This usually occurs while the databases throughout the network are recovering from a disruption (for example, when a circuit or line goes down) in the former path to a destination. This counter is maintained only on full-routing nodes and corresponds to event 4.0 (aged packet loss).

Node unreachable packet loss

This counter indicates the number of data packets lost because the destination node could not be accessed. This counter is maintained only on full routing nodes. This counter corresponds to event 4.1 (node unreachable packet loss).

Node out-of-range packet loss

This counter indicates the number of data packets discarded because the destination node's address is greater than the maximum address defined for the local node. This counter corresponds to event 4.2 (node out-of-range packet loss).

Oversized packet loss

This counter indicates the number of received data packets that were too large to forward because of the block size of the data link that would be used. This counter is maintained only on full-routing nodes, and corresponds to event 4.3 (oversized packet loss).

Packet format error

This counter indicates the number of packet format errors that occur because of invalid packet control information. This counter corresponds to event 4.4 (packet format error).

Partial routing update loss

This counter indicates the number of received routing messages that were too long to process. Part of a routing update may be lost if it contains a reachable node with an address greater than the maximum address defined for the local node. This counter is maintained only on full-routing nodes, and corresponds to event 4.5 (partial routing update loss).

Verification reject

This counter indicates the number of received verification messages that were invalid. It corresponds to event 4.6 (verification reject).

A.1.4 X.25 Protocol Module DTE Counters

This section contains a description of each X.25 protocol module DTE counter. These counters apply only to VAX PSI operations.

Seconds since last zeroed

This counter indicates the number of seconds that have elapsed since the module counters were zeroed. This counter provides a time frame for other counter values. The VAX PSI software increments this counter every second and clears it when the counters are zeroed.

Bytes received

This counter indicates the number of bytes of data received by the local DTE. You can use this information together with the data blocks received counter to determine the total traffic load.

Bytes sent

This counter indicates the number of bytes of data sent by the local DTE. You can use this information together with the data blocks sent counter to determine the total traffic load.

Data blocks received

This counter indicates the number of data blocks received by the local DTE.

Data blocks sent

This counter indicates the number of data blocks sent by the local DTE.

Calls received

This counter indicates the number of incoming calls received.

Calls sent

This counter indicates the number of outgoing calls made.

Fast selects received

This counter indicates the number of calls received with the fast select facility specified.

Fast selects sent

This counter indicates the number of calls sent with the fast select facility specified.

NCP

Supplemental NCP Information

Maximum switched circuits active

This counter indicates the number of switched virtual circuits that were active at any one time since the counters were last zeroed.

Maximum channels active

This counter indicates the maximum number of channels from the logical channels list that were active at any one time since the counters were last logged.

These circuits are ones whose logical channel numbers appear in the channels list regardless of whether the circuits are used for incoming or outgoing calls.

Received call resource errors

This counter indicates the number of times an incoming call has been rejected because of insufficient resources or an incorrect configuration (for example, no destination or object specified).

Locally initiated resets

This counter indicates the number of resets sent by the local DTE.

Remotely initiated resets

This counter indicates the number of resets (originated by a remote DTE) received by the local DTE.

Network initiated resets

This counter indicates the number of resets (originated by the PSDN) received by the local DTE.

Restarts

This counter indicates the number of times that the restart protocol procedure was used on the DTE.

A.1.5 X.25 Server Module Counters

This section contains a description of each X.25 server module counter. These counters apply only to VAX PSI operations.

Seconds since last zeroed

This counter indicates the number of seconds that have elapsed since the module counters were zeroed. This counter provides a time frame for other counter values. The VAX PSI software increments this counter every second and clears it when the counters are zeroed.

Maximum circuits active

This counter indicates the number of switched virtual circuits that have been set up since the counters were last zeroed.

Incoming calls rejected, no resources

This counter indicates the number of times the incoming call handler rejected a request to set up a virtual circuit because of insufficient resources.

A.2 DECnet Circuit and Line Devices

Table NCP-2 lists all currently recognized DECnet circuit and line devices. Note that VAX/VMS does not support all of the devices in this table.

Table NCP-2 DECnet Circuit and Line Devices

Mnemonic	Multi-plexed	Multi-access	DECnet–VAX Support	VAX PSI Support	Description
CI	No	Yes	Yes	No	CI-780 computer interconnect
DA	No	No	No	No	DA11-B or DA11-AL UNIBUS link
DL	No	No	No	No	DL11-C, DL11-WA, and DL11-E asynchronous line interface
DLV	No	No	No	No	DLV11-E asynchronous line interface (11/03 and 11/23 only)
DMC	No	No	Yes	No	DMC11-DA/AR, DMC11-MA/AL, DMC11-MD/AL, DMC11-FA/AR interprocessor links DMR11-AA, DMR11-AB, DMR11-AC, DMR11-AE interprocessor links
DMF	No	No	Yes	Yes	DMF32 synchronous line unit
DMP	No	Yes	Yes	No	DMP11 multipoint synchronous line device, DMV11 multipoint synchronous line device
DP	No	No	No	No	DP11-DA synchronous line interface
DPV	No	No	No	Yes	DPV11-DA synchronous line interface
DQ	No	No	No	No	DQ11-DA synchronous serial line interface
DTE	No	No	No	No	DTE20 interprocessor link
DU	No	No	No	No	DU11-DA synchronous line interface (includes DUV11)
DUP	No	No	No	Yes	DUP11-DA synchronous line interface
DV	Yes	No	No	No	DV11-AA/BA NPR synchronous line multiplexer
KDP	Yes	No	No	No	KMC11/DUP11-DA NPR synchronous line multiplexer
KDZ	Yes	No	No	No	KMC11/DZ11-A, -B, -C, -D NPR asynchronous line multiplexer
KL	No	No	No	No	KL8-J serial line interface
KMV	No	No	No	Yes	KMV11-A synchronous line interface combined with X.25 level 2 microcode
KMX	Yes	No	No	Yes	KMS11-BD/BE synchronous line interface combined with X.25 level 2 microcode

NCP

Supplemental NCP Information

Table NCP-2 (Cont.) DECnet Circuit and Line Devices

Mnemonic	Multi-plexed	Multi-access	DECnet-VAX Support	VAX PSI Support	Description
KMY	No	No	No	Yes	KMS11-PX/PY synchronous line interface combined with X.25 level 2 microcode
PCL	No	Yes	Yes	No	PCL11-B multiple CPU link
QNA	No	Yes	Yes	No	DEQNA multiaccess communications link
TT	Yes	No	Yes	No	DZ11-F, DZ32-F, or DZV11-D asynchronous serial line multiplexer
TX	No	No	Yes	No	DHU11, DHV11, DMF32 or DMZ32 asynchronous line unit
UNA	No	Yes	Yes	No	DEUNA or DELUA multiaccess communications link

A.3 Circuit, Line, Link, DTE, and Server Module States and Transitions

Each circuit, line, and logical link has sets of states and substates that reflect internal network software activity. Following are descriptions of circuit, line, and link states, and their substates and transitions, where appropriate. Also described are X25-SERVER module and DTE states, substates, and their transitions, which reflect internal VAX PSI activity. You cannot set or clear substates, but you can display them by using NCP.

A.3.1 Circuit and Line States and Transitions

Table NCP-3 lists all possible network management circuit and line states and substates. Table NCP-4 provides a list of state transitions that take place in response to certain user-initiated NCP functions. Some substates in these tables have an AUTO- prefix. These substates occur when circuit or line service operations take place. Refer to the *DNA Phase IV Network Management Functional Specification* for further information about circuit or line states, substates, and their transitions.

Table NCP-3 Circuit and Line States and Substates

State	Substate	Meaning
OFF	None	The circuit/line cannot be used.
ON	None	The circuit/line is in normal use by the owner.
	-SYNCHRONIZING	The circuit/line is in the hardware initialization cycle. For X.25 permanent virtual circuits, the circuit is being reset, restarted, or an error has occurred.
	-STARTING	The circuit/line is in the owner routing initialization cycle.

NCP

Supplemental NCP Information

Table NCP-3 (Cont.) Circuit and Line States and Substates

State	Substate	Meaning
CIRCUIT	-REFLECTING	The circuit/line is in use for passive loopback testing.
	-AUTODUMPING	The circuit/line is reserved for upline dumping.
	-AUTOSERVICE	The circuit/line is reserved for service use.
	-AUTOLOADING	The circuit/line is in use for automatic loading. For an X.25 KMX or KMY line, the microcode is being loaded.
	-AUTOTRIGGERING	The circuit/line is in use for automatic triggering.
	-DUMPING	The circuit/line is in use by the operator for upline dumping.
	-LOADING	The circuit/line is in use by the operator for loading.
	-LOOPING	The circuit/line is in use by the operator for active circuit or line loopback testing.
	-TRIGGERING	The circuit/line is in use by the operator for triggering.
	-FAILED	The DLM SVC has not been able successfully to call the remote DTE, and the maximum recalls limit has been reached.
LINE	SERVICE	None
	-REFLECTING	The circuit/line is in use for passive loopback testing.
	-LOADING	The circuit/line is in use by the operator for loading.
	-LOOPING	The circuit/line is in use by the operator for loopback testing.
	-TRIGGERING	The circuit/line is in use by the operator for triggering.

NCP

Supplemental NCP Information

Table NCP-4 Circuit and Line State Transitions

Old State	New State	Cause of Change
Any	OFF	Operator command: SET LINE STATE OFF, SET CIRCUIT STATE OFF
OFF	ON-STARTING	Operator command: SET LINE STATE ON, SET CIRCUIT STATE ON
	SERVICE	Operator command: SET LINE STATE SERVICE
ON	OFF	Operator command: SET LINE STATE OFF and SET CIRCUIT STATE OFF
	ON-STARTING	Routing restarted the data link (from either end).
	ON-SYNCHRONIZING	Hardware being restarted on either end of the link.
	ON-REFLECTING	The local node received a circuit/line loopback message from a remote system.
	ON-AUTOSERVICE	NETACP received a service request.
	ON-LOADING	Operator command: LOAD
	ON-LOOPING	Operator command: LOOP CIRCUIT
	ON-TRIGGERING	Operator command: TRIGGER
	SERVICE	Operator command: SET LINE STATE SERVICE, SET CIRCUIT STATE SERVICE
ON-STARTING	ON	Routing initialization completed.
	ON-REFLECTING	The local node received a circuit/line loopback message from a remote node.
	ON-AUTOSERVICE	NETACP received a service request.
	ON-LOADING	Operator command: LOAD
	ON-LOOPING	Operator command: LOOP CIRCUIT
	ON-TRIGGERING	Operator command: TRIGGER
	SERVICE	Operator command: SET LINE STATE SERVICE, SET CIRCUIT STATE SERVICE
ON-SYNCHRONIZING	None	The circuit/line is attempting to come up.
	OFF	Operator command: SET CIRCUIT STATE OFF.
	ON	For an X.25 PVC, the hardware has been restarted and both ends of the PVC have agreed to communicate.
ON-REFLECTING	ON-SERVICE	A passive circuit/line loopback operation terminated.
	ON-AUTOSERVICE	NETACP received a service request.
	ON-LOADING	Operator command: LOAD
	ON-LOOPING	Operator command: LOOP CIRCUIT
	ON-TRIGGERING	Operator command: TRIGGER
	SERVICE	Operator command: SET LINE STATE SERVICE, SET CIRCUIT STATE SERVICE
ON-AUTOSERVICE	ON-STARTING	NML released the line.
	ON-AUTOLOADING	NML initiated a load operation.

Table NCP-4 (Cont.) Circuit and Line State Transitions

Old State	New State	Cause of Change
ON-AUTOLOADING	ON-AUTOTRIGGERING	NML initiated a trigger operation.
ON-AUTOTRIGGERING	ON-AUTOSERVICE	Load operation completed.
ON-AUTOTRIGGERING	ON-AUTOSERVICE	The trigger operation completed.
ON-LOADING	ON-STARTING	The load operation completed.
ON-LOOPING	ON-STARTING	The active circuit/line loopback test completed.
ON-TRIGGERING	ON-STARTING	The trigger operation completed.
SERVICE	SERVICE-SYNCHRONIZING	The circuit/line is attempting to come up in MOP mode.
	SERVICE-REFLECTING	The local node received a circuit/line loopback message from a remote node.
	SERVICE-LOADING	Operator command: LOAD
	SERVICE-LOOPING	Operator command: LOOP CIRCUIT
	SERVICE-TRIGGERING	Operator command: TRIGGER
	OFF	Operator command: SET LINE STATE OFF and SET CIRCUIT STATE OFF
	ON-STARTING	Operator command: SET LINE STATE ON, SET CIRCUIT STATE ON
SERVICE-REFLECTING	SERVICE	A passive circuit/line loopback test completed.
	SERVICE-LOADING	Operator command: LOAD
	SERVICE-LOOPING	Operator command: LOOP CIRCUIT
	SERVICE-TRIGGERING	Operator command: TRIGGER
SERVICE-LOADING	SERVICE	The load operation completed.
SERVICE-LOOPING	OFF	Operator command: SET CIRCUIT STATE OFF
	SERVICE	The active circuit/line loopback test completed.
SERVICE-TRIGGERING	SERVICE	The trigger operation completed.

A.3.2 Link States

Table NCP-5 lists all possible network management states for logical links. Refer to the *NSP Functional Specification* for further information about link states.

Table NCP-5 Link States

State	Meaning
CC sending	Connect confirm sending. Confirmation of a connection is being sent from the destination node in response to a connect initiate from the originating node.
CI ACKed	Connect initiate acknowledged. The originating node has received a connect confirm from the destination node.
CI received	Connect initiate received. The destination node has received a connect initiate from the originating node.

NCP

Supplemental NCP Information

Table NCP-5 (Cont.) Link States

State	Meaning
CI sending	Connect initiate sending. The originating node is sending a connect initiate request to the destination node.
closed	The destination port is not available. The logical link has been disconnected, but the user program has not yet deassigned the channel to the network device.
DI received	Disconnect initiate received. The destination node has received a disconnect initiate message from the originating node.
DI sending	Disconnect initiate sending. The originating node is sending a disconnect initiate message to the destination node.
run	The logical link may be used for sending and receiving data.

A.3.3 DTE States and Transitions

Table NCP-6 lists all possible VAX PSI management states and substates for DTEs. Table NCP-7 provides a list of DTE state transitions that take place.

Table NCP-6 DTE States and Substates

State	Substate	Meaning
OFF	RUNNING	X.25 level 2 and level 3 software is operational but the DTE is not available for use.
	STARTING	X.25 level 2 software is operational but level 3 software is not. The DTE is not available for use. Incoming calls are cleared.
	SYNCHRONIZING	X.25 levels 2 and 3 are not operational and the DTE is not available for use.
ON	None	The DTE is available for normal use.
	STARTING	X.25 level 2 software is operational, level 3 software is starting up and the DTE will soon be available for use.
	SYNCHRONIZING	X.25 level 2 software is starting up and the DTE will soon be available for use.

Table NCP-6 (Cont.) DTE States and Substates

State	Substate	Meaning
SHUT	None	X.25 levels 2 and 3 are operational but the DTE is not to be used for any new activity; that is, all existing virtual circuits will be allowed to complete their operations.
	STARTING	X.25 level 2 software is operational and level 3 software is starting up. When the DTE is available for use, all existing virtual circuits will be allowed to complete their operations. Incoming calls are cleared.
	SYNCHRONIZING	X.25 level 2 software is starting up. When the DTE is available for use, all existing virtual circuits will be allowed to complete their operations.

Table NCP-7 DTE State Transitions

Old State	New State	Cause of Change
OFF-RUNNING	ON-RUNNING	Operator command: SET MODULE X25-PROTOCOL DTE STATE ON
	OFF-STARTING	X.25 level 3 software is resynchronizing.
	OFF-SYNCHRONIZING	X.25 level 2 software is resynchronizing.
OFF-SYNCHRONIZING	ON-SYNCHRONIZING	Operator command: SET MODULE X25-PROTOCOL DTE STATE ON
	OFF-STARTING	X.25 level 2 startup has completed.
OFF-STARTING	ON-STARTING	Operator command: SET MODULE X25-PROTOCOL DTE STATE ON
	OFF-RUNNING	X.25 level 3 startup has completed.
	OFF-SYNCHRONIZING	X.25 level 2 software is resynchronizing.
ON-RUNNING	OFF-STARTING	Operator command: SET MODULE X25-PROTOCOL DTE STATE OFF
	SHUT-RUNNING	Operator command: SET MODULE X25-PROTOCOL DTE STATE SHUT
	ON-STARTING	X.25 level 3 software is resynchronizing.
	ON-SYNCHRONIZING	X.25 level 2 software is resynchronizing.

NCP

Supplemental NCP Information

Table NCP-7 (Cont.) DTE State Transitions

Old State	New State	Cause of Change
ON-SYNCHRONIZING	OFF-SYNCHRONIZING	Operator command: SET MODULE X25-PROTOCOL DTE STATE OFF
	SHUT-SYNCHRONIZING	Operator command: SET MODULE X25-PROTOCOL DTE STATE OFF
	ON-STARTING	X.25 level 2 startup has completed.
ON-STARTING	OFF-STARTING	Operator command: SET MODULE X25-PROTOCOL DTE STATE OFF
	SHUT-STARTING	Operator command: SET MODULE X25-PROTOCOL DTE STATE SHUT
	ON	X.25 level 3 startup has completed.
	ON-SYNCHRONIZING	X.25 level 2 software is resynchronizing.
SHUT	OFF-RUNNING	Operator command: SET MODULE X25-PROTOCOL DTE STATE OFF
	ON	Operator command: SET MODULE X25-PROTOCOL DTE STATE ON
	SHUT-STARTING	X.25 level 3 software is resynchronizing.
	SHUT-SYNCHRONIZING	X.25 level 2 software is resynchronizing.
SHUT-SYNCHRONIZING	OFF-SYNCHRONIZING	Operator command: SET MODULE X25-PROTOCOL DTE STATE OFF
	ON-SYNCHRONIZING	Operator command: SET MODULE X25-PROTOCOL DTE STATE ON
	SHUT-STARTING	X.25 level 2 startup has completed.
SHUT-STARTING	OFF-STARTING	Operator command: SET MODULE X25-PROTOCOL DTE STATE OFF
	ON-STARTING	Operator command: SET MODULE X25-PROTOCOL DTE STATE ON
	SHUT	X.25 level 3 startup has completed.
	SHUT-SYNCHRONIZING	X.25 level 2 software is resynchronizing.

A.3.4 X.25 Server Module States and Transitions

Table NCP-8 lists all possible VAX PSI management states for the X.25 server module. Table NCP-9 summarizes state transitions that take place.

Table NCP-8 X.25 Server States

State	Meaning
OFF	The module is not in use.
ON	The module is available for normal use.
SHUT	The module is to be closed down but only when all present activity has ceased.

Table NCP-9 X.25 Server State Transitions

Old State	New State	Cause of Change
OFF	ON	Operator command: SET MODULE X25-SERVER STATE ON
ON	OFF	Operator command: SET MODULE X25-SERVER STATE OFF
	SHUT	Operator command: SET MODULE X25-SERVER STATE SHUT
SHUT	ON	Operator command: SET MODULE X25-SERVER STATE ON
	OFF	Operator command: SET MODULE X25-SERVER STATE OFF

A.4 Event Class and Type Summary

Following is a summary of NCP events in terms of their class and type. In general, event classes relate to specific layers of the DECnet architecture. The event logging components support the event classes summarized below.

Event Class	Description
0	Network Management layer
1	Applications layer
2	Session Control layer
3	End Communications layer
4	Routing layer
5	Data Link layer
6	Physical Link layer
7	X.25 packet level events
8-31	Reserved for other common classes
32-63	RSTS system specific

NCP

Supplemental NCP Information

Event Class	Description
64–95	RSX system specific
96–127	TOPS 10/20 system specific
128–159	VAX/VMS system specific
160–191	RT system specific
192–223	CT system specific
224–255	Communication server specific
256–479	Reserved for future use
480–511	Customer specific

DECnet-VAX will log events only for event classes 0, 3, 4, and 128–159. If you attempt to turn on logging for any other event, it will not get logged. All other classes will be supported for logging of processed events from other remote nodes. Events in class 7 will be logged only on nodes that have VAX PSI installed.

If the logging sink is the monitor and no name is specified, DECnet-VAX uses the OPCOM facility to display event messages on all terminals enabled as NETWORK (by means of REPLY/ENABLE=NETWORK), including the console. Event messages will have the following format:

```
event type class.type, event-text
from node address [(node-name)] dd-mmm-yy hh:mm:ss.ms
component-type, event-qualifiers,...
```

The event text is a standard text message as described below for each event class and type. The message format also includes the source node (address and node name, if available) and time stamp for when the event occurred. For most events, the message format includes the component type and name for which the event applies. Finally, the message format may include one or more event qualifiers that provide additional information as to the cause of the event. The following example is a typical message that may be displayed on the console:

```
Opcm, 22:45:51.19, SYSTEM      Accnt=
Opcm, DECnet event 4.7, line down, line fault
From node 5 (TRNTO), 21-JAN-1986 22:45:51.13
Line DMC-0, Line synchronization lost
```

The information accompanying each event description below includes a brief description of event qualifiers that may be displayed for the event.

Note that OPCOM does not display line or node counters on the terminal device. However, they are written to the console sink.

A.4.1 Network Management Layer Events

The following specific event classes and types are supported for each layer. Only those events and entire event classes marked with an asterisk will be logged by DECnet-VAX components.

0.0 Event records lost*

Events occurred too rapidly for the event logger to buffer them.

0.1 Automatic node counters

A node counter timer expired, thus prompting this event. This message displays the name of the node for which the event applies, along with the node counters for that node.

0.2 Automatic line counters

A line counter timer expired, thereby producing this event. This message displays the name of the line for which the event applies, along with the line counters for that line.

0.3 Automatic circuit service

An adjacent node requested an automatic circuit service operation. This message displays the name of the circuit for which the event applies, along with the following event qualifiers: the service function performed (load or dump), the status of the operation (requested, successful, or failed), the node address, the file specification, and the software type. If the operation fails, this status includes an NML error message and details.

0.4 Line counters zeroed

Line counters were zeroed. This message displays the name of the line for which the event applies. The event logger logs these counters prior to the execution of a request to zero them.

0.5 Node counters zeroed

Node counters were zeroed. This message displays the name of the node for which the event applies. The event logger logs these counters prior to the execution of a request to zero them.

0.6 Passive loopback*

The software initiated or terminated a passive loopback test on behalf of an adjacent node. This message displays the name of the line for which the event applies, along with one event qualifier that specifies the state of the operation (initiated or terminated).

0.7 Aborted service request*

An adjacent node requested a service over a line connected to the local node. However, a problem prevented it from being processed at the local node. This message displays the name of the line for which the event applies, along with one event qualifier that specifies the reason for the failure. The reason may be one of the following:

Line open error

NML received an MOP message and was unable to acquire control of the line. Either NML did not have the privilege to perform the operation or it could not set the substate of the line; or the line had another owner.

Line state change by higher level

The line was preempted by a higher priority function. For example, you used NCP to turn the line off.

NCP

Supplemental NCP Information

Receive error

A line error occurred while trying to receive the request.

Receive timeout

The line message receive timer expired before the request could be received from the adjacent node. Either the timer was too short, the line error level was too great for any message to get through, or the adjacent node stopped requesting.

Unrecognized request

A message was received but was not recognizable as a request for upline dumping, downline loading, or passive loopback testing. The adjacent node may be running an incompatible version of the line service protocol.

0.8 Automatic counters*

A counter timer for a node, circuit, or line has expired, thereby producing this event. This message displays the name of the component for which the event applies, along with the counters for that line.

0.9 Counters zeroed*

Counters were zeroed for the node, circuit, or line. This message displays the name of the component for which the event applies. The event logger logs these events prior to the execution of a request to zero them.

A.4.2 Session Control Layer Events

The following specific event classes and types are supported for the session control layer.

2.0 Local node state change

The operational state of the local node changed because of an operator command. Note, however, that the transition from SHUT to OFF also happens automatically when the last logical link is disconnected (under normal operation).

This message displays three event qualifiers: the reason for the state change (operator command or normal operation), the old state (ON, OFF, SHUT, or RESTRICTED), and the new state.

2.1 Access control reject

The local node rejected a connection request because of invalid access control information.

This message displays four event qualifiers: the name and address of the source node; the object type number and process ID of the source process requesting the connection; the object type number and process ID of the destination process to receive the connection request; and the invalid access control information.

A.4.3 End Communications Layer Events

The following specific event classes and types are supported for the End Communications layer. The Network Services Protocol (NSP) is the protocol which operates within the End Communications layer. Only those events and entire event classes marked with an asterisk will be logged by DECnet-VAX components.

3.0 Invalid message*

NSP received a message that could not be interpreted. This may indicate a software malfunction in either the local or remote NSP. This message displays one event qualifier—the NSP message that was invalid. Refer to the *Network Services Functional Specification* for a description of NSP messages.

3.1 Invalid flow control*

The remote NSP attempted to modify the local flow control value in an invalid manner. This may indicate a software malfunction in either the local or remote NSP. This message displays one event qualifier—the current flow control value. Refer to the *Network Services Functional Specification* for a description of flow control.

3.2 Database reused

The local node received a connection request from a node for which there is no counter block. All counter blocks have been previously used, and one of the previously used blocks is available for this new node. This results in the loss of node counters for the node that formerly occupied the database entry.

This message displays the name of the node for which the database entry was formerly used, along with the node counters for that node.

A.4.4 Routing Layer Events

The following specific event classes and types are supported for the Routing layer. Only those events and entire event classes marked with an asterisk will be logged by DECnet-VAX components.

4.0 Aged packet loss*

Routing discarded a packet because it had visited too many nodes. This can be a normal occurrence when the network is reconfiguring its routing databases. It can be a failure when the MAXIMUM HOPS value is set too small. This can cause the MAXIMUM VISITS value to be too small for a path that should be usable.

This message displays the name of the line for which the event applies, along with one event qualifier—the packet header. This is information from the beginning of the packet. For non-Ethernet packets, it consists of a hexadecimal byte of flags, the decimal destination and source node addresses, and a hexadecimal byte of forwarding data. For Ethernet packets, it also includes the Ethernet address of the destination and source, the service type,

NCP

Supplemental NCP Information

and the protocol type. Refer to the *Routing Functional Specification* for additional information.

4.1 Node unreachable packet loss*

Routing discarded a packet because the local node found that the destination node was unreachable. This event provides a trace of what has happened to packets that are not reaching their destination.

This message displays the name of the line for which the event applies, along with one event qualifier—the packet header (as described for event 4.0).

4.2 Node out-of-range packet loss*

Routing discarded a packet because the destination node number was greater than the maximum node number known to the local node. Typically, this results from the addition of a new node to the network without increasing the MAXIMUM ADDRESS value on the local node, yet expecting the local node to route packets to that node.

This message displays the name of the line for which the event applies, along with one event qualifier—the packet header (as described for event 4.0).

4.3 Oversized packet loss*

Routing discarded a packet because it was too large to forward to the appropriate adjacent node. Typically, this occurs when the adjacent node's buffer size is too small or when the source node sends a packet that is too large.

This message displays the name of the line over which the packet was to be forwarded, along with one event qualifier—the packet header (as described for event 4.0).

4.4 Packet format error*

Routing discarded a packet because of a format error in the packet header. This usually results from a programming error in the packet formatting by the adjacent node, though it could result from a line error that was not detected by the line protocol.

This message displays the name of the line for which the event applies, along with one event qualifier—the packet beginning. This consists of the first 6 bytes of the packet, displayed as hexadecimal.

4.5 Partial routing update loss*

Routing received a routing message that contained node addresses greater than the maximum address known to the local node. Subsequently, information on these nodes was lost. This occurs when the MAXIMUM ADDRESS value on an adjacent node has been increased to accommodate more nodes, but the local node's has not.

This message displays the name of the line over which this message was received, along with two event qualifiers—the packet header (as described for event 4.0) and the highest node address in the routing update that was lost.

4.6 Verification reject*

An attempt to initialize with another node failed. The local node received an invalid password in the verification requested of the adjacent node during routing initialization over the line. Either the local node expected the wrong receive password, or the adjacent node sent the wrong transmit password.

This message displays the name of the line for which the event applies, along with one event qualifier—the address of the adjacent node that failed to initialize.

4.7 Circuit down, circuit fault*

An error has occurred for the circuit. This message displays the name of the circuit for which the event applies, along with one event qualifier—the reason for the event. The reason could be one of the following:

Adjacent node address change

The adjacent node changed addresses without going through the normal initialization sequence. This is also logged when an adjacent node attempts to initialize with the local node, but the adjacent node's address is not in the database.

Adjacent node address out of range

The adjacent node's address is greater than the maximum address defined for the local node. This may be caused by an incorrectly defined node address or by a failure to update the local node's database when a new node was added.

Adjacent node block size too small

The line block size provided by the adjacent node is too small for normal network operation. The block size may be set incorrectly at the adjacent node.

Adjacent node listener receive timeout

The node has received no message over the data link within the last 30 seconds. This usually means that the remote node is not running.

Adjacent node listener received invalid data

A test message sent by the adjacent node contained invalid or corrupted data. This is most likely caused by a hardware problem.

Call failed

An outgoing SVC call failed. This is an X.25 event.

Data errors

The line was declared down by the local node's line protocol handler when the line exceeded an error threshold.

NCP

Supplemental NCP Information

Dropped by adjacent node

The adjacent node was responsible for breaking the circuit connection.

Invalid verification seed value

A Routing initialization message sent by an adjacent node is not formatted properly. This is most likely caused by a remote network software problem.

Line synchronization lost

The normal line protocol was restarted or terminated by the adjacent node. Either a line exceeded an error threshold, or network management initiated a line state change. DMR/DMC failures that cause a line synchronization error are as follows:

- Threshold errors, including more than eight attempts to transmit a message, or eight NAKs received in a row.
- Start message received in the ON state (that is, the remote system detected an error and restarted the line).
- Maintenance requested while in the ON state (that is, the remote system tried to perform a maintenance operation such as LOOP CIRCUIT).
- Message was lost because no buffer was available in CPU memory.
- Non-existent memory error.
- Procedure error, because of driver failure or hardware failure.
- Timeout on request to transmit a message in 255 seconds.
- Power failure.

Routing update checksum error

A routing update packet failed its internal integrity test.

Unexpected packet type

A packet was received out of the normal protocol sequence. For example, the local node received a normal data packet when it expected a verification packet.

Verification password required from Phase III node

A required routing initialization password was not specified before an attempt was made to initialize the Phase III node in a Phase IV network.

Verification receive timeout

A required verification packet was not received from the adjacent node within the required response time. Either packets were lost on the line or a failure occurred at the adjacent node.

Version skew

The routing version of the adjacent node is unacceptable to the local node. The operator may have installed incorrect software at the adjacent node.

4.8 Circuit down*

An error has occurred for the circuit. This message displays the name of the circuit for which the event applies, along with the following event qualifiers: the packet header (as described for event 4.0), the reason (as described for event 4.7), and the address of the adjacent node.

4.9 Circuit down, operator initiated*

An operator error has occurred for the circuit. This message displays the name of the circuit for which the event applies, along with the following event qualifiers—the packet header (as described for event 4.0), the reason (as described for event 4.7), and the addresses of the expected node and the adjacent node.

4.10 Circuit up*

A remote node has initialized on one of the physical lines connected to the local node. This message displays the name of the line for which the event applies, along with one event qualifier—the address of the newly initialized node.

Be sure to note that this event does not imply that the node is reachable. Reachability is determined by the higher-level routing algorithms.

4.11 Initialization failure, line fault*

A remote node failed to initialize with the local node because of a physical line error. This message displays the name of the line for which the event applies, along with one event qualifier—the reason for the event (as described for event 4.7).

4.12 Initialization failure*

A remote node failed to initialize with the local node because of a software error. This message displays the name of the line for which the event applies, along with two event qualifiers—the packet header (as described for event 4.0) and the reason (as described for event 4.7).

4.13 Initialization failure, operator initiated*

A remote node failed to initialize with the local node because of an operator error. This message displays the name of the line for which the event applies, along with three event qualifiers—the packet header (as described for event 4.0), the reason (as described for event 4.7), and the version received from the adjacent node.

4.14 Node reachability change*

Because of Routing operation, the reachability of a remote node has changed. This message displays the name of the node for which the event applies, along with one event qualifier—the routing status of the node (reachable or unreachable).

NCP

Supplemental NCP Information

4.15 Adjacency up*

The adjacent node on the circuit is initialized. This message displays the name of the circuit for which the event applies, and one event qualifier—the address of the adjacent node.

4.16 Adjacency rejected*

The adjacent node on the circuit is not initialized. The message displays the name of the circuit for which the event applies, and two event qualifiers—the address of the adjacent node and the reason for the event (as described for event 4.7).

4.17 Area reachability change*

Because of Routing operation, the reachability of an area has changed. This message displays the name of the area for which the event applies, along with one event qualifier—the routing status of the area (reachable or unreachable).

4.18 Adjacency down*

An error has occurred for an adjacency on the circuit. This message displays the name of the circuit for which the event applies, along with the following event qualifiers—the reason (as described for event 4.7), the packet header (as described for event 4.4), and the address of the adjacent node on the circuit.

4.19 Adjacency down, operator initiated*

An adjacency on the circuit is down because of an operator error. This message displays the name of the circuit for which the event applies, along with the following event qualifiers—the reason (as described for event 4.7), the packet header (as described for event 4.0), and the addresses of the expected node and the adjacent node on the circuit.

A.4.5 Data Link Layer Events

The following specific event classes and types are supported for the Data Link layer. Only those events and entire event classes marked with an asterisk will be logged by DECnet-VAX components.

5.0 Locally initiated state change

The line state changed because of an operator command. This message displays the name of the line for which the event applies, along with two event qualifiers—the old DDCMP state (HALTED, ISTRT, ASTRT, RUNNING, or MAINTENANCE) and the new DDCMP state. Refer to the *DDCMP Functional Specification* for a description of these states.

5.1 Remotely initiated state change

A remote user changed the line state. This message displays the name of the line for which the event applies, along with two event qualifiers (see event 5.0).

5.2 Protocol restart received in maintenance mode

The remote node restarted normal operation while the local node had the line in maintenance mode. This message displays the name of the line for which the event applies.

5.3 Send error threshold

Too many data transmission errors occurred. This message displays the name of the line for which the event applies, along with the line counters for that line and one event qualifier—the address of the received station (node).

5.4 Receive error threshold

Too many data reception errors occurred. This message displays the name of the line for which the event applies, along with the line counters for that line and one event qualifier (see event 5.3).

5.5 Select error threshold

Too many selection errors occurred. This message displays the name of the line for which the event applies, along with the line counters for that line and one event qualifier (see event 5.3).

5.6 Block header format error

DDCMP received an invalid block header. This message displays the name of the line for which the event applies, along with one event qualifier—the invalid block header. Refer to the *DDCMP Functional Specification* for a description of the block header format.

5.7 Selection address error

The wrong tributary responded in the polling process. This event occurs only for a multipoint control station when one receives a message that does not match the address of the currently selected tributary.

This message displays the name of the line for which the event applies, along with three event qualifiers—the tributary addresses of the selected tributary, the received tributary, and the previous tributary.

5.8 Streaming tributary

A tributary on the line is impeding the use of that line. This message displays the name of the line for which the event applies, along with two event qualifiers—the tributary address of the received tributary and the status of the tributary. The status may be any of the following:

- Streaming
- Continued send after timeout
- Continued send after deselect
- Ended streaming

NCP

Supplemental NCP Information

5.9 Local buffer too small

A local buffer is too small for receiving a block of data. This message displays the name of the line for which the event applies, along with two qualifiers—the length (in bytes) of the received block and the length (in bytes) of the buffer.

5.13 Line initialization failure

An initialization failure occurred over an Ethernet line. This message displays the name of the line for which the event applies.

5.14 Send failure on line

A data transmission attempt failed on an Ethernet line. This message displays the name of the line for which the event applies, along with two event qualifiers—the reason for the failure and the distance. Failure reasons can include excessive collisions, short or open circuits, too long a frame, a framing error, an unrecognized frame destination, a remote failure to defer, a block check error, or data overrun.

5.15 Receive failed on line

Data was not received on an Ethernet line. This message displays the name of the line for which the event applies, along with two event qualifiers—the reason for the failure (as described in event 5.14) and the Ethernet header which includes the source and destination node addresses and the protocol type.

5.16 Collision detect check failed on line

A check for collision detection failed on an Ethernet line. The message displays the name of the line for which the event applies.

5.17 DTE up*

A local DTE has synchronized X.25 levels 2 and 3. The DTE address and network name are displayed.

5.18 DTE down*

A local DTE is resynchronizing X.25 levels 2 and 3. The DTE address and network name are displayed.

5.19 Retransmit maximum exceeded*

A frame has been retransmitted the maximum number of times for this line without having received an acknowledgment. This means that either the PSDN or the line to the PSDN has failed.

5.20 FRMR received*

A frame reject was received. This is an error which cannot be solved by retransmitting the same frame again. This is usually due to a protocol violation.

5.21 Illegal frame received

The frame received was not correctly formatted, or was not the frame expected by the X.25 protocol.

A.4.6 X.25 Packet Level Events

The following specific event classes and types are supported for X.25 packet level events. Only those events and entire event classes marked with an asterisk will be logged by DECnet-VAX components on nodes that have VAX PSI installed.

7.3 DTE state change*

The operator has altered the DTE state to that displayed.

7.4 Illegal packet received*

VAX PSI has received a packet from the PSDN which is invalid in some way. This is usually because of a protocol violation by the PSDN.

7.5 Invalid LCN*

This is used whenever the LCN (logical channel number) in the received packet is invalid. For example: the network has sent a restart packet with a nonzero LCN, a call request packet on an LCN already in use, or a packet on an unused LCN, or tried to use a LCN reserved for a PVC. This is usually because of a protocol violation by the PSDN, but can be caused by not correctly configuring the PVCs in the database.

7.6 Flow control invalid*

Invalid P(S) received or invalid P(R) received. This is because of a protocol error.

7.7 Restart*

Either a restart packet was received or one sent (in which case another event may also be logged). This may indicate a protocol error or that the DCE or DTE has reinitialized. The cause and diagnostic codes displayed in the message should be checked in the PSDN documentation.

7.8 Clear*

A clear packet with a nonzero cause code was either received or sent because of a protocol error. The cause and diagnostic codes displayed in the message should be checked in the PSDN documentation.

7.9 Reset*

A reset packet with a nonzero cause code was either received or sent because of a protocol error. The cause and diagnostic codes displayed in the message should be checked in the PSDN documentation.

NCP

Supplemental NCP Information

7.10 Diagnostic*

A diagnostic packet was either received or sent because of a protocol error. The cause and diagnostic codes displayed in the message should be checked in the PSDN documentation.

7.11 Reject*

A reject packet was received. VAX PSI does not support receiving reject packets as PSDNs are not permitted to send them.

7.12 Retransmission maximum exceeded*

The specified packet has been transmitted the maximum number of times without being acknowledged by the PSDN. Usually this is caused by a failure by the PSDN or the connection to the PSDN, but may be because the DTE is not correctly configured.

7.13 Call failed

The call (incoming or outgoing) has failed because of one of the following reasons: the application process has exited, the application has rejected the call, no destination has been set up, insufficient resources are available, a call has collided, security checks have failed, a PSDN or a remote DTE has cleared the call.

7.14 State change*

The operator has initiated a state change such as shutting down the node. This event is displayed when you shut down PSI (or a part of PSI, such as the X.29 server).

A.4.7 VAX/VMS System-Specific Events

The following system-specific event classes and types are supported for VAX/VMS. Events and event classes marked with an asterisk will be logged by DECnet-VAX components.

128.1 DAP CRC error detected*

A CRC error was detected at the DAP level by the file access listener (FAL) or by RMS. The event displays the name of the node to which the connection was established.

128.2 Duplicate PHASE 2 address error*

A circuit connection was attempted to a PHASE 2 node which was already reachable. You are only allowed one circuit connection to any PHASE 2 node.

128.3 Process created*

A process has been created to handle an incoming X.25 call. The message displays process-name, process-id and the status returned by the \$CREPRC system service.

128.4 Process terminated*

A process created to handle an incoming X.25 call has terminated.
The message displays the process-id and the exit status of the process.



Index

A

Abbreviation of NCP commands • NCP-4
AUTO prefix • NCP-174

C

Circuit
 counters • NCP-159, NCP-161
 devices • NCP-173
 states • NCP-174 to NCP-176
 transitions • NCP-174 to NCP-176
Circuit counter summary • NCP-159, NCP-161
CLEAR CIRCUIT command • NCP-13
CLEAR EXECUTOR command • NCP-16
CLEAR EXECUTOR NODE command • NCP-20
CLEAR LINE command • NCP-21
CLEAR LOGGING command • NCP-23
CLEAR LOGGING EVENTS command • NCP-25
CLEAR LOGGING NAME command • NCP-27
CLEAR MODULE X25-ACCESS command • NCP-28
CLEAR MODULE X25-PROTOCOL command • NCP-29
CLEAR MODULE X25-SERVER command • NCP-32
CLEAR MODULE X29-SERVER command • NCP-32
CLEAR NODE CIRCUIT command • NCP-37
CLEAR NODE command • NCP-34
CLEAR OBJECT command • NCP-38
Command prompting
 See Prompt syntax
Command syntax
 See Syntax
CONNECT NODE command • NCP-40
CONNECT VIA command • NCP-41
COPY KNOWN NODES command • NCP-42
Counters
 circuit • NCP-159, NCP-161
 line • NCP-165
 node • NCP-169
 summary of network • NCP-159
 X.25 protocol module • NCP-171
 X.25 server module • NCP-172

D

Data Link layer events • NCP-190
DEFAULT ACCESS parameter • NCP-68
DEFINE CIRCUIT command • NCP-60
DEFINE EXECUTOR command • NCP-67
DEFINE LINE command • NCP-77
DEFINE LOGGING EVENTS command • NCP-84
DEFINE LOGGING STATE command • NCP-86
DEFINE MODULE CONFIGURATOR command • NCP-88
DEFINE MODULE X25-ACCESS command • NCP-90
DEFINE MODULE X25-PROTOCOL command • NCP-92
DEFINE MODULE X25-SERVER command • NCP-97
DEFINE MODULE X29-SERVER command • NCP-97
DEFINE NODE CIRCUIT command • NCP-107
DEFINE NODE command • NCP-102
DEFINE OBJECT command • NCP-109
Directing output • NCP-1
DISCONNECT LINK command • NCP-45
DTE
 states • NCP-178
 state transitions • NCP-179
 substates • NCP-178

E

E-address
 See Ethernet address
End Communications layer events • NCP-185
Ethernet address • NCP-8
Event
 Data Link layer • NCP-190
 End Communications layer • NCP-185
 Network Management layer • NCP-182
 Routing layer • NCP-185
 Session Control layer • NCP-184
 VAX/VMS specific • NCP-194
 X.25 Packet level • NCP-193
Event class and type summary • NCP-181 to NCP-194
Exiting NCP • NCP-1, NCP-3
External clock • NCP-77

Index

H

HELP command • NCP-46
HELP facility • NCP-11
Hex password • NCP-9

I

Internal clock • NCP-77
Invoking NCP • NCP-1, NCP-3
Issuing commands • NCP-4

L

Line
 counters • NCP-165
 devices • NCP-173
 states • NCP-174 to NCP-176
 transitions • NCP-174 to NCP-176
Line counter summary • NCP-165
Link
 states • NCP-177
LIST CIRCUIT command • NCP-115
LIST EXECUTOR command • NCP-120
LIST LINE command • NCP-123
LIST LOGGING command • NCP-128
LIST MODULE CONFIGURATOR command • NCP-131
LIST MODULE X25-ACCESS command • NCP-134
LIST MODULE X25-PROTOCOL command • NCP-135
LIST MODULE X25-SERVER command • NCP-138
LIST MODULE X29-SERVER command • NCP-138
LIST NODE command • NCP-140
LIST OBJECT command • NCP-145
LOAD NODE command • NCP-48
LOAD VIA command • NCP-50
LOOP CIRCUIT command • NCP-52
LOOP EXECUTOR command • NCP-54
LOOP LINE command • NCP-55
LOOP NODE command • NCP-56

N

Network
 circuit devices • NCP-173
 line devices • NCP-173
Network Management layer events • NCP-182
Node counters • NCP-169
Node counter summary • NCP-169, NCP-170

O

Object code values • NCP-111

P

Pipeline quota parameter • NCP-71
Privilege
 required for NCP commands • NCP-1
Prompting sequence
 examples • NCP-6 to NCP-7
 exiting • NCP-5
Prompt syntax • NCP-5
 component part • NCP-5
Protocol module counters • NCP-171
PURGE CIRCUIT command • NCP-13
PURGE EXECUTOR command • NCP-16
PURGE LINE command • NCP-21
PURGE LOGGING command • NCP-23
PURGE LOGGING EVENTS command • NCP-25
PURGE LOGGING NAME command • NCP-27
PURGE MODULE CONFIGURATOR command • NCP-58
PURGE MODULE X25-ACCESS command • NCP-28
PURGE MODULE X25-PROTOCOL command • NCP-29
PURGE MODULE X25-SERVER command • NCP-32
PURGE MODULE X29-SERVER command • NCP-32
PURGE NODE CIRCUIT command • NCP-37
PURGE NODE command • NCP-34
PURGE OBJECT command • NCP-38

Q

Quota
 pipeline • NCP-71

R

Required privileges • NCP-1
Routing layer events • NCP-185

S

Server module counters • NCP-172
Session Control layer events • NCP-184
SET CIRCUIT ALL command • NCP-59
SET CIRCUIT command • NCP-60
SET EXECUTOR ALL command • NCP-66
SET EXECUTOR command • NCP-67
SET EXECUTOR NODE command • NCP-74
SET LINE ALL command • NCP-76
SET LINE command • NCP-77
SET LOGGING ALL command • NCP-83
SET LOGGING EVENTS command • NCP-84
SET LOGGING STATE command • NCP-86
SET MODULE CONFIGURATOR command • NCP-88
SET MODULE X25-ACCESS command • NCP-90
SET MODULE X25-PROTOCOL command • NCP-92
SET MODULE X25-SERVER command • NCP-97
SET MODULE X29-SERVER command • NCP-97
SET NODE ALL command • NCP-101
SET NODE CIRCUIT command • NCP-107
SET NODE command • NCP-102
SET OBJECT ALL command • NCP-108
SET OBJECT command • NCP-109
SHOW AREA command • NCP-113
SHOW CIRCUIT command • NCP-115
SHOW EXECUTOR command • NCP-120
SHOW LINE command • NCP-123
SHOW LINKS command • NCP-126
SHOW LOGGING command • NCP-128
SHOW MODULE CONFIGURATOR command •
NCP-131
SHOW MODULE X25-ACCESS command •
NCP-134
SHOW MODULE X25-PROTOCOL command •
NCP-135
SHOW MODULE X25-SERVER command •
NCP-138
SHOW MODULE X29-SERVER command •
NCP-138
SHOW NODE command • NCP-140
SHOW OBJECT command • NCP-145

State

substates • NCP-174
transitions • NCP-176

Syntax

event list identification • NCP-9
of NCP commands • NCP-4
rules for naming NCP components and
parameters • NCP-7

T

TELL command • NCP-147
TRIGGER NODE command • NCP-149
TRIGGER VIA command • NCP-151

V

VAX PSI
DTE states and substates • NCP-178
DTE state transitions • NCP-179
server module states • NCP-181
server module state transitions • NCP-181
VAX/VMS system specific events • NCP-194

X

X.25
protocol module counters • NCP-171
server module counters • NCP-172
server module states • NCP-181
server module state transitions • NCP-181
X.25 packet level events • NCP-193

Z

ZERO CIRCUITS command • NCP-152
ZERO EXECUTOR command • NCP-153
ZERO LINE command • NCP-154
ZERO MODULE X25-PROTOCOL command •
NCP-155
ZERO MODULE X25-SERVER command • NCP-156
ZERO MODULE X29-SERVER command • NCP-156
ZERO NODE command • NCP-157



READER'S COMMENTS

Note: This form is for document comments only. DIGITAL will use comments submitted on this form at the company's discretion. If you require a written reply and are eligible to receive one under Software Performance Report (SPR) service, submit your comments on an SPR form.

Did you find this manual understandable, usable, and well organized? Please make suggestions for improvement.

Did you find errors in this manual? If so, specify the error and the page number.

Please indicate the type of user/reader that you most nearly represent:

- Assembly language programmer
- Higher-level language programmer
- Occasional programmer (experienced)
- User with little programming experience
- Student programmer
- Other (please specify) _____

Name _____ Date _____

Organization _____

Street _____

City _____ State _____ Zip Code _____
or Country _____

— Do Not Tear - Fold Here and Tape —

digital



No Postage
Necessary
if Mailed in the
United States

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO.33 MAYNARD MASS.

POSTAGE WILL BE PAID BY ADDRESSEE

SSG PUBLICATIONS ZK1-3/J35
DIGITAL EQUIPMENT CORPORATION
110 SPIT BROOK ROAD
NASHUA, NEW HAMPSHIRE 03062-2698



— Do Not Tear - Fold Here —

Cut Along Dotted Line

READER'S COMMENTS

Note: This form is for document comments only. DIGITAL will use comments submitted on this form at the company's discretion. If you require a written reply and are eligible to receive one under Software Performance Report (SPR) service, submit your comments on an SPR form.

Did you find this manual understandable, usable, and well organized? Please make suggestions for improvement.

Did you find errors in this manual? If so, specify the error and the page number.

Please indicate the type of user/reader that you most nearly represent:

- Assembly language programmer
- Higher-level language programmer
- Occasional programmer (experienced)
- User with little programming experience
- Student programmer
- Other (please specify) _____

Name _____ Date _____

Organization _____

Street _____

City _____ State _____ Zip Code.
or Country

— — Do Not Tear - Fold Here and Tape — — — — —

digital



No Postage
Necessary
if Mailed in the
United States

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO.33 MAYNARD MASS.

POSTAGE WILL BE PAID BY ADDRESSEE

SSG PUBLICATIONS ZK1-3/J35
DIGITAL EQUIPMENT CORPORATION
110 SPIT BROOK ROAD
NASHUA, NEW HAMPSHIRE 03062-2698



— — Do Not Tear - Fold Here — — — — —

Cut Along Dotted Line